FLYERS CREEK WIND TURBINE AWARENESS GROUP INC

SUBMISSION
TO DEPARTMENT OF PLANNING & INFRASTRUCTURE

PROPOSED FLYERS CREEK WIND FARM
BLAYNEY LOCAL GOVERNMENT AREA
MP 08_0252

Flyers Creek Wind Turbine Awareness Group Inc
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December 15th, 2011

The Director General
Major Development Assessment
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Dear Sir,

Re: Proposed Flyers Creek Wind Farm, Blayney Local Government Area
Application reference: MP 08_0252

The Flyers Creek Wind Turbine Awareness Group Inc. (FCWTAG) is comprised of a large group of concerned residents of the Blayney Local Government Area.

We object to the Proposed Flyers Creek Wind Farm ("the proposal") in the strongest possible terms. We believe this development is totally inappropriate.

This submission details our objections.

The FCWTAG requests that representatives of the group be given the opportunity to speak at the Planning Assessment Commission hearing related to this proposal.

Yours faithfully,

_____

Dr. Colleen J Watts OAM
On behalf of the FCWTAG Inc

1.

EXPLICIT CAUTIONARY NOTICE

TO THOSE RESPONSIBLE FOR WIND TURBINE

ASSESSMENTS, APPROVALS AND DEVELOPMENT

Specifically

Directors of Wind Energy Companies, Publicly Elected Officials from Federal, State and Local Government, and Bureaucrats in Relevant Departments

BE ADVISED that, as a result of information gathered by the Flyers Creek Wind Turbine Awareness Group, from the clinical and acoustic research available nationally and internationally, serious medical conditions have been identified in people living, working, or visiting within 10 kilometres of operating wind turbine developments. The onset of these conditions would appear to correspond directly with the operation of wind turbines.

We remind those in positions of responsibility for the engineering, investment and planning decisions about project and turbine siting that their primary responsibility is to ensure that developments cause no harm to adjacent residents; and, if there is any possibility of any such harm, then the project should be re-engineered or cancelled. To ignore existing evidence by continuing the current practice of siting turbines close to homes represents a breach of the duty of care, and thus attracts grave liability.



Figure 0.1 FLYERS CREEK LANDSCAPE
Aspect takes in the historic farm, home and shearing shed of "Willow Park"
(refer to Chapter 10)

ACKNOWLEDGEMENTS

The following people contributed or assisted towards this submission on the Environmental Assessment of the Flyers Creek Wind Farm Proposal by Infigen Energy:

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Cr. Malcolm Barlow (Upper Lachlan)
Paul Miskelly
Bryan and Karen Lyons (Coopers Gap, Qld)
Bill and Sandy Rogerson (Glenthompson, Vic)

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2. EXECUTIVE SUMMARY

The Flyers Creek Wind Turbine Awareness Group has examined the Environmental Assessment presented by Infigen Energy concerning the Flyers Creek Wind Farm Proposal. The following objections are listed:

ISSUES	OBJECTIONS
Justification of Project	1. Should the NSW Government, via their agent the Department of Planning and Infrastructure approve the Flyers Creek Wind Farm it will be disregarding its **duty of care** to the residents in proximity to this industrial wind turbine complex. 2. Should the NSW Government, via their agent the Department of Planning and Infrastructure approve the Flyers Creek Wind Farm is will ignoring **the precautionary principle** particularly in relation to health, welfare and community affairs as recommended by the Federal Senate Inquiry into Rural Wind Farms. 3. The NSW Government must: • Declare a moratorium on the construction of wind turbines until appropriate research has been carried out to assess all health effects; • Be mindful of the recent appeal before the South Australian Supreme Court which was upheld on the basis of non compliant noise. This action must determine the adequacy of the SA EPA Noise Guidelines which NSW also uses. 4. The proposal for the FCWF must be rejected: • Wind turbine generated electricity is inefficient, uneconomic, and intermittent and does not create a net saving in CO_2 emissions. • Issues of equity where one landholder obtains an income at the expense of a neighbour. • Issues of equity where one landholder destroys or significantly impacts the "quiet enjoyment", "rest and repose" and visual amenity of a neighbour. • Industrial Wind sites destroy "Rurality" and are therefore contrary to residents natural and deliberate geographic and locality choice of abode.

	• There has been no consideration of the effects of noise on school children (one school 1.5 km away), the elderly and the disabled, all groups in the community with increased susceptibility. • **Reduced land values for both host and non-host landholders alike.** • There is legislative confusion, lack of structure and no proper mechanism to deal with complaints about noise. No Government Authority (including local government, EPA or Department of Planning) appears to take **responsibility for the noise compliance of the energy company's operation.** Noise complaints are referred back to the energy company. This needs to be addressed as a matter of urgency.
Community Consultation	1. The community consultative process has been extremely inadequate, and there has been a lack of detailed information available from Infigen Energy. 2. The proponent has failed to engage with the community and has fostered division within the community. 3. There has been a tendency to claim other organisations' meetings, minor newspaper articles and other media items as part of the community consultation. Often these have not been relevant to the FCWF proposal. 4. From a face-to-face point of view their has been a lack of respect, and a dismissive attitude by Infigen to many district residents, particularly if they reflect an opposing view to the FCWF.
Noise Impacts & Health Implications	1. Aurecon (Infigen's environmental consultant) has used the GE2.5xl-2.5 MW wind turbine to model noise impacts which significantly "under-represents" the eventual model that will be used, introducing significant sources of errors. **The Director General should refuse the FCWF proposal on these grounds alone.** 2. The measurement of background sound and the modelling of noise impact of the proposed FCWF is flawed and inaccurate.

	3. There is no measurement of prediction of ***tonality*.** 4. Monitoring of sound at Capitol Wind Farm by The Acoustic Group has found non-compliance of audible sound levels, and significant levels of infrasound also above allowable levels. This work casts into doubt the ability of wind turbines operated at Flyers Creek to be able to comply in any way with acceptable and regulated levels of noise. **The Director General should refuse the FCWF proposal on these grounds**. 5. The matter of noise guidelines and measurement, tonality and other issues are currently being examined by the South Australian courts and **no decision regarding the FCWF proposal should be contemplated until these matters are determined.** 6. Effective monitoring and compliance regimes must be imposed by the planning authority at the outset. None are proposed or contained in the Flyers Creek Environmental Assessment and it should not be approved on this basis.
Visual Impacts	1. The wind turbines will dominate, scar and industrialise the landscape. 2. The wind turbines will degrade the scenic qualities of the rural landscape in which residents have chosen to live, completely altering the visual environment and alienating residents whose rights to the quiet enjoyment of their property have been usurped. 3. There will be cumulative visual effects both locally and within the shire where Blayney Wind Farm, Cadia Valley Operations (Newcrest Mining), and other projected wind farms and mines will effectively create a massive industrial rural landscape. 4. The report on flicker produced by Parsons Brinckerhoff Australia inadequately predicts the effects of flicker on affected residences and does not address the possible effects on people/children with epilepsy or autism. 5. The substation is poorly located and visually impacts at least one residence.

Flora and Fauna	1. No **Soil** and **Water Management Plan** for either the construction or the operational phase of the project is presented as part of the Environmental Assessment. Leaving this plan to be developed as part of the Conditions of Consent has meant that there can be no public comment on this important aspect. 2. No **Construction Environmental Management Plan** (to include detailed design of site access points, tracks, underground cables etc) has been presented in the Environmental Assessment. The EA states that this will be developed in consultation with an ecologist. Again it appears that this plan will be developed as part of the Conditions of Consent and again there is no opportunity for public comment. It is assumed, but is not clear, that the Soil and Water Management Plan differs from the Construction Environmental Management Plan. 3. Deficiencies in the flora survey: The EA states that the exact loss of trees **cannot be quantified** at this time as the location of the infrastructure, particularly tracks and cable routes, has not been finalised. Why has the EA been presented for public comment without this important aspect of the plan described? How can a determination be made on the FCWF proposal without specific details in place? 4. The Environmental Assessment does not make adequate provision for the preservation of tree hollows which are critical for parrot breeding, specifically important in the Flyers Creek area for the vulnerable **superb parrot** and **turquoise parrot**. 5. The presence of **raptors** – in particular the protected Wedge-tailed eagle – is noted and a plan for minimisation of collision mortality is proffered. This is inadequate. 6. Micro bats are very important to the ecology of the area which accommodates two vulnerable species (only one surveyed). Micro bats are susceptible to fatal barotrauma. The Environmental Assessment makes no mention of this and there are no plans suggested to mitigate this. 7. There does not appear to be any assessment of the effect of the transmission line through the Canobolas State Forest on flora and fauna as required by the DGRs. 8. There is some consideration of the impact of the project on birds

	and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines and transmission lines. But the demonstration of how the project has been sited to avoid and/or minimise such impacts is sketchy, and apparently details will be decided later. FCWTAG do not believe the DGRs are adequately met.
Water	1. The water studies in the Environmental Assessment are not substantial and there has been little attention to water supply, surface flows and ground water. 2. Protection of the water via surface flows, in the event of an oil spill or other accident with hazardous material, is not detailed sufficiently. 3. The site water demand takes no account of water required in the event of fire. 4. There is no assessment of the leaching of heavy metals, and other components, from the concrete footing over the life span of the wind turbine, or of the decades following.
Traffic and Transport	1. There is no **Transport** and/or **Traffic Management Plan** in place, and provided for public scrutiny as part of the Environmental Assessment. 2. Similarly there is no **Construction Environmental Management Plan** in place. 3. There is insufficient detail about the rectification, maintenance and upgrade of local Council roads to be meaningful. 4. There is insufficient detail about the upgrading, construction and maintenance of farm access tracks and how they will meet environmental standards. 5. Blayney Shire Council has responsibilities in the area of shire roads, waste and ratepayer amenity. Questions of critical interest to the welfare of Blayney residents and ratepayers are unanswered. 6. Blayney shire residents' public interest is not met.

Indigenous and Cultural Heritage	1. The assessment of Aboriginal cultural heritage is superficial and has dismissed requests by Aboriginal stakeholders for further surveys as not necessary. 2. The assessment of the non-Aboriginal cultural heritage has also been dismissed as irrelevant and of no significance ignoring the fact that the pastoral history, and associated historic villages and buildings form a vital part of the district's cultural and built past.
Cumulative Impacts	1. The environmental assessment (EA) for the Flyers Creek Wind Farm has significantly failed to properly address the cumulative impact of the Flyers Creek Wind Farm with other industrial activity currently taking place within the immediate Flyers Creek district, namely: 2. Cadia Valley Operations (Newcrest) gold and copper mine adjacent to the proposed wind farm, and 3. Blayney Wind Farm situated 8 kilometres from the proposed wind farm. 4. Other industries also add to the cumulative impact of industrialisation, making the addition of the proposed FCWF a significant deterrent to new residents seeking a rural lifestyle and associated tranquillity.
Hazards and Risks	1.The FCWF will interfere with aerial agricultural operations. 2. The FCWF will interfere with local aviation businesses and clubs. 3.Consultation with CASA and the matter of obstacle lights has **not** been dealt with adequately in the EA. 4 The impact of the proposed extension to the Orange Aerodrome has **not** been addressed in the EA, and the resultant changes in the Obstacle Limitation Surface OLS). 5 The impact of the proposed extension of Orange Aerodrome and future local radar requirements has **not** been addressed in the EA. 6 The ability for aerial fire fighting close to the wind turbines, and probably also land based fire fighting, is compromised with dangerous consequences.

	7 49 residences are within the safety 2 km limit to the closest wind turbine recommended for **blade failure**. 8 The fire management plan is not formulated and is not part of the EA for public comment. Despite a small list of management options in the event of a fire in one of the turbines there is the risk of catastrophic sequelae to such a fire in a bush fire prone area. 9 There is no evacuation plan for Errowanbang Public School in the EA in the event of a bush fire.There is restricted fire fighting capabilities due to distance and availability of the Rural Fire Service. 10 There is no description of exactly what mitigating techniques will be used in the event of **digital television reception failure**, nor who will be responsible for any rectification. 11 Future geophysical exploration and mining is compromised. 12 Accident mitigation is not adequately described.
Decommissioning And Waste Management	1. The arrangements for decommissioning as set out in the Environmental Assessment are inadequate and provide both the host and the community with little security to ensure the timely decommissioning and removal of the wind turbines at the end of their useful life. **2.** The argument for a decommissioning bond is dismissed by Infigen as unnecessary whereas research shows this is the only security available to the community. **The DGRs are not met.** 3. There is insufficient information provided in the EA concerning waste management in any of the construction, operation or decommissioning phases.

3. ISSUES RELATING TO JUSTIFICATION OF THE PROJECT

Director-General's Requirements

The Director-General requires the following to be addressed:

1. A detailed summary of the project including:
    - Construction, operation and decommissioning details
    - The location and dimensions of all project components
    - A timeline identifying the proposed construction and operation of the project components, their envisaged lifespan and arrangements for decommissioning and staging

2. Consideration of any relevant statutory provisions.

3. An assessment of key issues during construction, operation and decommissioning

4. A draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project.

5. A justification of the project taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest.

6. Specifically this Strategic Justification must include:
    - A strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies;
    - A clear demonstration of quantified and substantiated greenhouse gas benefits;
    - An analysis of the suitability of the project with respect to potential land use conflicts with existing and future surrounding land uses (including rural residential development, land of significant scenic or visual value, land of high agricultural value, mineral reserves and conservation areas), taking into account local and strategic land use objectives; and
    - A description of alternatives considered (location and/or design) and provide justification for the preferred project demonstrating its benefits on a local and strategic scale and how it achieves stated objectives.

3.1 SUMMARY OF OBJECTIONS

Project Justification: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

3.1.1 Should the NSW Government, via their agent the Department of Planning and Infrastructure approve the Flyers Creek Wind Farm it will be disregarding its **duty of care** to the residents in proximity to this industrial wind turbine complex.

3.1.2 Should the NSW Government, via their agent the Department of Planning and Infrastructure approve the Flyers Creek Wind Farm is will ignoring **the precautionary principle** particularly in relation to health, welfare and community affairs as recommended by the Federal Senate Inquiry into Rural Wind Farms.

3.1.3 The NSW Government must:

- Declare a moratorium on the construction of wind turbines until appropriate research has been carried out to assess all health effects;
  Be mindful of the recent appeal before the South Australian Supreme Court which was upheld on the basis of non compliant noise. This action must determine the adequacy of the SA EPA Noise Guidelines which NSW also uses

3.1.4 The proposal for the FCWF must be rejected:

- Wind turbine generated electricity is inefficient, uneconomic, and intermittent and does not create a net saving in CO_2 emissions.

- Issues of equity where one landholder obtains an income at the expense of a neighbour.

- Issues of equity where one landholder destroys or significantly impacts the "quiet enjoyment", "rest and repose" and visual amenity of a neighbour.

- Industrial Wind sites destroy "Rurality" and are therefore contrary to residents natural and deliberate geographic and locality choice of abode.

- There has been no consideration of the effects of noise on school children (one school 1.5 km or closer from nearest turbine), the elderly and the disabled, all groups in the community with increased susceptibility.

- **Significant doubts regarding the decommissioning process.**

- **Reduced land values for both host and non-host landholders alike.**

- There is legislative confusion, lack of structure and no proper mechanism to deal with complaints about noise. No Government Authority (including local government, EPA or Department of Planning) appears to take **responsibility for the noise compliance of the energy company's operation.** Noise complaints are referred back to the energy company. This needs to be addressed as a matter of urgency.

3.2 JUSTIFICATION AND THE PUBLIC INTEREST

3.2.1 Government's Role and Duty of Care.

A duty of care is a legal obligation to avoid causing harm or injury to others. Government agencies and decision-makers are under a duty of care in many situations and have a legal obligation to take reasonable care to avoid causing harm or injury to others. Reasonable care must be taken to avoid the risks and dangers that are reasonably foreseeable. The standard of care that should be observed will vary with the circumstances. For example, a higher degree of care is expected where the risk of injury is high, the potential damage is serious, or a dangerous consequence could easily be avoided.[17]

A major function of government is to regulate the conduct of others, so as to safeguard public health, prevent environmental damage, ensure building safety, control public order, and similar objectives. There is a duty to take reasonable care in conducting that regulation. The Government is the ultimate custodian of all matters of Public Interest.

It is argued in this submission (Chapter 5) that there are issues of noise impacts and public health associated with the development of industrial wind turbines. These are real and demonstrable, and are supported by international peer-reviewed research.

To ignore this evidence, to vilify those who display health issues directly relating to wind turbines, and to approve wind turbine development close to human habitation would be a failure on the part of the NSW Government and its Minister for Planning and Infrastructure to honour its legislated obligations of duty of care.

Of great concern is the fact that distrust, anxiety and frank depressive illness may precede industrial wind turbine (IWT) development as has already been seen in this

district. Considerations of cessation of local development, investment and expansion have also been noted. The disintegration of a former cohesive society is now very evident with the formation of divisions which will never heal. Many of our community will move away which will simply magnify our loss by way of reduced services and never be regained. Services such as schooling, health, transport and merchandising will never recover.

3.2.2 Duty of Care regarding children, the elderly and the disabled

Although concerns of health, noise and the people affected by the proposed wind turbines is examined in more detail in Chapter 5, the special issues regarding Government's duty of care to children, the disabled and the elderly is particularly pertinent for Government.

Children, the elderly and many disabled are particularly vulnerable to the impacts of noise. Their increased susceptibly to auditory damage compared to the general population is well known and documented.[10] These groups are often not able to articulate and defend their own interests, thus it is essential for Government to accept they legal obligation and assume this role. A duty of care is therefore a critical element of Government's civic responsibilities to these vulnerable sectors of the population.

In relation to the Flyers Creek Wind Farm proposal, there are **three** schools 5 kilometres or less to the closest wind turbines. Carcoar and Mandurama Schools are both approximately 5 kilometres but Errowanbang School, with an enrolment of about 40, is 1.5 kilometres from its nearest turbine with several within 2 to 3 kilometres. There is increasing evidence that people are adversely affected by the noise from wind turbines out to 5 and even 10 kilometres due to sound wave propagation. Moreover sound exhibits synergism so that the additive effects of several proximate wind turbines will increase the impact on children by a factor greater than the sum of their values.

Humans exposed to chronic noise which is intrusive do not accommodate with time to this noise as is often quoted. This myth remains another example of false and misleading information used by profit orientated companies to continue to damage Australian rural families.

The Environmental Assessment makes no attempt to address this issue. There is no evidence that Infigen consulted with the Department of Education and Communities. The Flyers Creek Wind Turbine Awareness Group was made aware of this when one of its members wrote to the Minister for Education, the Hon Adrian Piccoli MP. The

Department of Education and Communities upon our insistence has seriously accepted their legislated obligation and duly written to the Department of Infrastructure and Planning requesting that the proponent be required to provide the local school communities with information on the development.

The Department has also requested on our insistence that, through the Preferred Project Report, the proponent be required to **identify** and **clarify** the **potential impacts** of the proposed Flyers Creek Wind Farm on the **health** and **learning environments** of the adjacent school communities. These potential impacts include **noise** and **vibration** and **Electro Magnetic Radiation** from **transmission lines, substations** and **telecommunication towers.**

Since the proponent (Infigen – FCWF) has a vested interest in there being little or no impact and since they have already stated that there are no adverse health effects from wind turbines it is unlikely that they will produce a negative report for the Department of Health and Communities. **It is therefore in the Government's interest and duty of care to ensure that the information they receive can be independently corroborated, and that the Department of Planning and Infrastructure take careful note of the implications for the susceptible groups in the district.**

The elderly are also considered to be at risk. Uralba Retirement Village in Carcoar is 5 kilometres from FCWF and has 16 residents (soon 22) with associated staff. This is a facility for the frail in our community. There has been no attempt to consult with the Manager or Board and presumably Infigen would deny there will not be any health problems associated with the wind turbines. Yet, increasing evidence as mentioned above, indicates that these highly vulnerable residents will be at risk due to this distance from the turbines.

Australia has a responsibility for the disabled under the **United Nations Convention on Persons with Disabilities** of which Australia is a signatory. This includes people with particular susceptibilities which make them especially vulnerable to wind turbine noise impacts: for instance, those with vision and hearing deficits; those who are ill or incapacitated; and those who have mental disabilities (Appendix 1).

3.2.3 Infigen (Flyers Creek Wind Farm) and its Duty of Care

Flyers Creek Wind Farm Pty Limited, and/or its parent company Infigen Energy has an obvious duty of care to any person it affects. If it wilfully neglects this duty of care then it may incur charges of criminal negligence. This duty of care is set out in Criminal Negligence Code S266[50] which states:

> **Everyone who has in their charge or under his control anything, whatever whether living or inanimate, or who erects makes or maintains anything whatever, which in the absence of precaution or care may endanger human life, is under a legal duty to take responsible precautions against and use reasonable care to avoid such danger, and is criminally responsible for the consequences of omitting without lawful excuse to perform such duty.**

Health consequences resulting from negligence are often liable to attract legal proceedings. It is shown here that there is significant evidence of health effects caused by sound from wind turbines. In the Environmental Assessment (ES) Infigen denies any adverse health effects in people associated with wind farms It is disingenuous for it to claim ignorance of the rapidly increasing body of peer reviewed research that corroborates this fact. It would seem that commercial pressures dictates that wind farm construction should proceed despite any scientific and medical doubts that are emerging. To proceed without the risks to health in particular being researched and quantified may be grounds for criminal charges, including mass class action, should adverse health outcomes develop as a result of the wind turbine operation.

3.2.4 The precautionary principle

The World Health Organisation defines The Precautionary Principle[8]:

> When there is a reasonable possibility that the public health will be endangered, even though scientific proof may be lacking, action should be taken to protect the public health, without awaiting full scientific proof.

Moreover the precautionary principle is a **moral and political principle** which also calls for the burden of proof to fall on those who would advocate taking the action.

In other words, no new industrial process should be imposed on an unsuspecting public without having been thoroughly, publicly, and independently studied beforehand. Patently this has not happened with the wind turbine industry and it is only in the last few years that the mounting evidence of the health effects of wind turbines are such that they can no longer be ignored.

The precautionary principle dictates that studies need to be **urgently** carried out to establish if wind turbine projects impose risks to health or safety of the target communities. A moratorium should be established and such projects should not be allowed to proceed until this is completed. If the research indicates risk, then prevention is mandated. Until then it is a matter of good governance to adopt the precautionary principle in the interests of public health.

To repeat: the introduction of the precautionary principle is currently an important and ignored recommendation of the Federal Senate inquiry into wind farms.

It is therefore mandatory that this project, the proposed Flyers Creek Wind Farm (and indeed other project proposals before the NSW Department of Planning and Infrastructure), be postponed and not considered for approval pending:

- A moratorium being put in place until -

- Sufficient, appropriate and independent research is performed, peer reviewed and published;

- Assurance that this research be **funded** by the industrial wind turbine industry as they are the only organisations profiting from these developments. Further, that recognition of company profits by government ensures that taxpayer funds are not utilised in the research process.

- The Department of Planning and Infrastructure is in a position to then make a considered and informed decision through its Duty of Care provisions;

- The Supreme Court of South Australia has recently upheld the appeal in the matter of Quinn-v-AGL Hallett 3 stating, there were issues of noise and **tonality** at Hallett 2 and that the South Australian EPA Guidelines under which that wind farm was assessed were insufficient to safeguard health. The SA Supreme Court returned the matter back to the Environment Resources and Development (ERD) Court for determination. It is obvious that the guidelines will need to be urgently reviewed and upgraded. Since NSW assesses wind turbine developments under the same guidelines the Department of Planning and Infrastructure should halt all development assessments immediately until the introduction of new and more rigorous guidelines are introduced. (See Chapter 5).

It is apparent that there is considerable coercion on the NSW Government by energy companies and the Federal Government to deliver approval for a large number of wind turbine projects. This coercion is driven by the Federal Government's 20/20

renewable energy policy and the wind turbine industry's fear of the inevitable withdrawal of Renewable Energy Certificates (RECs) planned for 2025. **However public interest mandates health issues to be investigated with scientific rigour without commercial interests receiving preferential consideration.**

The issue of noise and health will be more fully examined in Chapter 5.

3.3 JUSTIFICATION, EFFICIENCY AND COST EFFECTIVENESS

3.3.1 Problems of Efficiency and Efficacy

An overview "Examining the Effects of Wind Turbine Industrial Development in Rural Areas"[61] found that internationally wind turbines have not reduced the world's dependence on fossil fuels. As well wind energy supporters have also exaggerated the ability of wind to reduce sulphur dioxide, nitrous oxide and carbon dioxide. More locally, Australia is producing wind energy but it is happening at such a low rate that it has yet to have an impact on conventional energy usage.

Miskelly, A. and Quirk[32] report that eleven wind turbine installations in South East Australia were examined by the Australian Energy Market Operator (AEMO) and found that these turbines produced more than 80% of their output only 8% of the time, while they produced 8% of their output 80% of the time. There were two important conclusions:

1. Wind turbines do **not** generate as much power as they should. Even Infigen's claim in the Flyers Creek Wind Farm Environmental Assessment puts the capacity factor at 34.45% which would seem to be an overestimate given the AEMO's and (many other authorities) findings (see above).

2. Wind turbines work roughly at the same time, which means that if the wind is not blowing when required to meet demand, it is impossible to produce energy unless there is an alternate source of electricity on standby, namely coal or gas fired generators). It can be readily shown that on a daily basis, even when the wind is blowing, there will always be a mismatch between peak electricity production (night) and peak electricity consumption (day).

Despite ridiculous assertions in the FCWF Environmental Assessment to the contrary, electricity output can never be described as "smoothly varying". In fact it is constantly varying over a very wide range, and at times extremely rapidly. On over 30 occasions during the calendar year 2010 the total wind farm output for eastern Australia (as determined using AEMO data) plunged to less than 2% of installed capacity, and indeed on several occasions dropped to zero[33].

In addition, there are frequent, sharp, unpredictable changes in the output amounting to several hundred megawatts at a time. On the electricity grid, where the load/generation balance must be managed second-by-second, this sort of behaviour is completely unacceptable for the grid operator. This then has to be compensated for by varying the output of the controllable generators which have to be kept constantly running and whose sole task is to balance the wind's vagaries.

In engineering parlance this is an example of "common-mode failure" and means that at these times the entire wind generation fleet has failed – a result of the combination of variable weather systems as they cross the continent, exacerbated by the wind turbine characteristic to produce massive changes in output in response to small changes in wind speed.

This situation is demonstrably unpalatable because this is a **common-mode failure**, and whether 10 or 100,000 wind farms were to be connected to the grid there would still be the same unacceptable number of common-mode failures, but with an additional twist: the larger the number of wind farms, the larger are those totally unacceptable power excursions, making it even harder to control the grid, making it more unstable and increasing the likelihood of frequent, unpredictable, widespread blackouts across the eastern Australian grid.

The FCWF Environmental Assessment claims that as we construct and operate more wind farms the power industry will be able to stop burning coal and gas. In fact, seemingly perverse, the exact opposite will occur. The results of analysis[33] show that each increment of wind generation requires the provision of fast-acting, controllable, back up generation; that is, each new 100MW of wind farms will require 100MW of new fossil-fuelled generation solely for backup. Furthermore, each such 100MW of fossil-fuelled generation has to provide on average 60-70MW output because of the wind farms' poor capacity factor.

In the light of the above it is patently obvious that construction of wind turbines will not allow the shutdown of any coal or gas burning electricity generators, and indeed will necessitate the construction of additional back-up generators.

3.3.2 Economic Implications of Wind Power

There are presently 1052 wind turbines operating in Australia. The renewable energy plan (20% of electricity generated from renewable energy sources by 2020) calls for an almost tenfold increase in the number of turbines to meet this target. In New South Wales there are currently 18 wind farm applications being processed under Part 3A, one being recently approved. These 18 projects expect to account for

approximately 2500 turbines and will be almost exclusively built along the Great Dividing Range (Southern Highlands, Central Tablelands, and New England Tablelands).

The high construction costs for wind turbines ($2.4 million per kilowatt hour) is more than **double** that of gas or coal, and the government's subsidy of wind energy will undoubtedly flow onto the consumers (domestic and industrial). While solar is more expensive again it doesn't have the same problems of storage and intermittency, whereas wind power requires back-up generators.

Therefore the high cost of wind power resolves into the following constraining factors:

- High capital cost
- Cost of back up generation
- Cost of connecting small turbines to the transmission infrastructure
- High repair costs resulting from a number of different scenarios and causes
- The above ensures that wind turbine produced electricity is 3 times the cost of coal fired power.

In considering the relative costs of avoiding carbon emissions, wind plus back up generation is still the most expensive, followed by coal with carbon capture and storage, then combines cycle gas turbines and the cheapest is nuclear energy.

In regard to finite fossil fuel resources, Australia has well over 500 years of reserves of coal and gas and will remain Australia's primary source of electricity production for the next decade or so, until reliable high capacity green/renewable technologies such as geothermal and solar-thermal come on line.

These and other reliable high capacity green/renewable technologies are set to replace existing technologies in the near future with the aid of the Federal Government's:

- $10 billion Clean Energy Finance Corporation;
- Research, development and commercialisation of renewable energy at an early stage through the $3.2 billion Australian Renewable Energy Agency, and
- Research and development of clean technologies through the $200 million Clean Technology Innovation Program[33].

Flyers Creek Wind Turbine Awareness Group, as part of this submission, does not see its role to discuss the relative merits of alternative electricity generation technologies, including also other forms of renewable energy. Suffice to say, the way forward is not to engage in wind energy with its concomitant costs and subsidies, all of which

will ultimately devolve to the consumer and tax payer and which will be unable to provide any cost effective reduction in carbon dioxide emissions.

FCWTAG does not believe that the Environmental Assessment convincingly argues its case for the justification of the project on the grounds of economics. The EA states "The project contributes to inter-generational equity by reducing greenhouse gas emissions and reducing consumption of finite fossil fuel resources" but they are unable to substantiate this in any meaningful or convincing way.

3.3.3 Specific Comments regarding the Flyers Creek Wind Farm proposal.

1. The EA (Chapter 18) states that the "wind farm will predominately displace electricity generation from fossil fuels; it reduces greenhouse gas emission by approximately 305,000 tonnes per year. This amount of greenhouse gas savings is equivalent to removing approximately 70,000 cars from Australia's roads."

   This figure (derived from the NSW Greenhouse Gas Saving Tool is fatuous and based on several questionable assumptions:

   (i) Any power delivery by the wind farm will replace by 100% the same amount of power from a coal fired power station. This is clearly impossible as coal fired power generators take many hours to change their production outputs. Gas fired power generators has a faster uptake time but there is still a considerable lag period.

   (ii) The CO_2 output from a coal fired power station is 1.07 Kg per KWh.; The more modern coal fired power stations (of which over 6,000MW was approved for construction in 2010) have CO_2 outputs well below 0.90 Kg of CO_2 per MWh.; A CCGT (combined cycle gas turbine) CO_2 produced is 0.45 Kg per MWh. It is obvious that the savings in CO_2 output will depend on the type of back-up generation that is used. There is **no** indication that back-up generation, its cost and its CO_2 output have in any way been considered in the EA.

   (iii) The Greenhouse Gas Saving Tool makes the assumption that there will be no carbon tax or emission trading scheme until 2015. Clearly that is no longer true since it will now be legislated to commence on 01/07/2012.

2. Further the EA states that "the project contributes to inter-generational equity by reducing greenhouse gas emissions and reducing consumption of finite fossil fuel resources". In truth, **far greater reduction in greenhouse emissions would be**

achieved through the conversion of coal fired power stations to Closed Cycle Gas Plants of which 6,500MW (more than 100 times the capacity of this wind farm) has been approved or are in the NSW planning system as of 14 November 2011.

3. The EA makes several statements in Chapter 18 (Justification) which are anecdotal at best and completely erroneous at worse. The EA states "The project enjoys support from the majority of the local community as well as the mayor of Blayney Shire Council". There is no proof to back up this statement. As far as the FCWTAG is aware the Mayor made one statement to the local newspaper in 2010 when he "thought it was probably a good idea" but without the backing of Council since no resolution concerning the FCWF has been an item of business at a Blayney Council Meeting. There is no substantiation either that the majority of the community favour the project. In fact the reverse is equally tenable: at a Council arranged community forum (but suggested by the FCWTAG) arranged on 28th November 2011 where 84 people attended the vast majority were opposed to the development.

4. The EA states "It provides additional income to the landowners on which the wind farm will be located". While that is true it is hoped that the wind turbine hosts have factored in the many restrictions that will be placed on them and the freedom of passage that they usually enjoy which will be taken from them. The most significant sequel however will be that increased income to one host landholder comes at the expense of neighbours who do not wish to have wind turbines in their community. Their wishes are dismissed and they will effectively be subsidising the increased income their neighbouring hosts will receive. Platitudinous statements such as that quoted above and reflecting this attitude only serves to further fracture the community over this issue.

5. The EA states that the FCWF project "is likely to provide a significant boost to the local economy particularly during the construction phase of the project including employment of local contractors and increased business opportunities for local businesses." The EA states that there will be 50 jobs available during the construction phase and no doubt local businesses may benefit to some extent. However many of these jobs will require specialist personnel – there is hardly a pool of experienced wind turbine construction workers in Blayney Shire. As with many of these projects many of the jobs will be of the "fly in-fly out" category and not result in increased local jobs. Construction is mooted to take about 18 months at the end of which, after commissioning, the EA states there will be three (3) non-resident jobs.

6. If construction is permitted, our district will be completely destroyed and rendered into a rural, industrial, despoiled landscape. This iniquitous circumstance thus ensures:

- The power company (Infigen's subsidiary Flyers Creek Wind Farm P/L) can make profit from wind energy production which will only be profitable because of tax payer and consumer subsidies (direct and indirect) and which will **not result in any significant reduction in greenhouse emissions;**

- Wind turbine hosts can make a profit at the **expense** of their neighbours;

- After construction, there will be a possible asset to the district of a mere 3 full time jobs;

- The wind turbine developers do not contribute any funds to the Shire Council by way of Section 94 or Rate payments.

- There are stresses on the district infrastructure (roads, environment, wildlife etc) that cannot be contained.

- The experience of other communities with enforced industrial wind turbine (IWT) sites has been an appalling lack of ongoing monitoring.

- There is currently no regulatory mechanism by which people suffering health effects from IWT can seek redress through a government Department.

- Regulations concerning IWT have been systematically excised from **The NSW Industrial Noise Policy** because they are no longer described as **scheduled premises.**

- Regulation concerning IWT have been systematically excised from **The Protection of the Environment Operations Act (POEO Act 1997)**

- Health affected Residents complaining to **Local Council** will be told thy have not the **Resources, Time** or the **Inclination.** The complaint will then be referred to **The Developer** to pursue the obviously ineffectual mechanism of self-regulation.

This flawed system provides no assurance of genuine rigor or natural justice and leaves the complainant with 2 alternatives:

1. **Leave** the district.

2. Seek **Legal Recourse** via the court system, if there are adequate funds to ensure justice or time to pursue a very protracted litigious process.

- Residents' health can be adversely affected (see Chapter 5);

- The community will obviously remain divided, far beyond the lifetime of the project. There will be the destruction of the network of neighbours with previous common aspirations and life styles who were bound together in the common cause of support and community spirit.

7. The Environmental Assessment ironically sums up the situation thus: "Nevertheless, the visual and acoustic impact of the operating wind farm for some neighbours may be of concern and **could only be avoided if the wind farm were not built."**

3.4 JUSTIFICATION AND BLAYNEY SHIRE COUNCIL

3.4.1 Blayney Shire Council is not the consent authority for the approval of the Flyers Creek Wind Farm. As a Project of Critical Infrastructure the approval falls to the NSW Department of Planning and Infrastructure. Blayney Shire Council nevertheless has a role in passing along the wishes and opinions of its ratepayers to the Department of Planning as part of its own submission on the Environmental Assessment.

3.4.2 The limit of Council's community consultation has been to call one meeting on 28th November 2011, on insistence of the Flyers Creek Wind Turbine Awareness Group wishing to obtain more information from the proponent and to bring the discussion finally into the public domain. This meeting, though well attended did little to inform the public. There appears to have been nothing else undertaken by Council to ascertain the feelings of the community regarding the FCWF.

3.4.3 The Council had not discussed this as an item of business in **any** Council meeting that the FCWTAG is aware of until 12th December 2011, when Council resolved to provide a submission on the proposal to the Department of Planning and to seek an interview with the Department to seek further information. There has not been a resolution either

supporting, or otherwise, the proposal to host the Flyers Creek Wind Farm within the Blayney Shire.

3.4.4 Blayney Shire council does not have a **Development Control Plan (DCP)** which is a glaring deficiency in the opinion of other Councillors and Councils. This document puts forward the wishes of the shire residents and, while not enforceable, it is a document of resident wishes. Its absence indicates a lazy disrespect of shire residents and their democratic expectations.

3.4.5 Should Blayney Council decide to support the proposed FCWF it will be contrary to its own policies. In a 4 page "Farm Management Plans – Information Sheet" developed to be used as a guide for landowners in the local government area who wish to prepare a Farm Management Plan, it is stated:

"Council is committed to maintain agricultural land for agricultural purposes and to ensure that appropriate developments on agricultural land do not occur."

And further:

"Activity on the land which would diminish the aesthetic value of the land, or which would have a negative effect and make it difficult for neighbouring landowners to carry out their own legal and permitted uses of the land, could also be considered inappropriate land use."

While it has been pointed out emphatically to members of FCWTAG that State laws, regulations and decisions will always over-ride those of local government, this is **no way prevents Blayney Shire Council from arguing this proposition with the Department of Planning, and in so doing maintaining a stance on its stated policy.**

3.4.6 Blayney Council will have a significant role in the provision of required infrastructure for the wind turbine installation to proceed, principally relating to roads, transport and traffic control. The Director-General has made one of his requirements in the Environmental Assessment the provision "details of the nature of traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads, bridges and intersections, including any proposed road upgrades and repairs." While there is some discussion of these items in the EA there appears to have been little consultation with Blayney Shire Council officers, no Traffic and Transport Management Plan has been provided. This latter apparently is to be left to the relevant contractor to compile with Council and the RTA sometime in the future. **This is a significant deficiency in the EA and addresses the DGRs poorly.**

3.4.7 The wind turbines will produce noise and historically complaints have and are being made about noise from other wind turbine operations in Australia. Council will now be the first contact for noise complaints and will need to have a protocol in place to manage complaints, although it is difficult to determine what Council can actually do. There is no mechanism for dealing with complaints or for monitoring noise to assess operational compliance by the energy company.

Council does not appear to have any legislative powers to deal with noise relating to any State Significant Development (SSD) (i.e. Project of Critical Infrastructure) as FCWF is designated. The EPA also does not appear to have carriage of this matter as wind turbine noise has been removed from the POEO Act. Wind turbines are also not covered by the NSW Industrial Noise Policy because wind turbines are not deemed to be scheduled premises.

In the final analysis Council may only be able to refer noise complaints back to the wind turbine operator (in this case Flyers Creek Wind Farm). This is a ridiculous and illogical situation and demands the attention of Government to put a regulatory mechanism in place. **At the very least the POEO Act should be amended to include noise from wind turbines and the EPA should be given the appropriate authority and resources to monitor noise, deal with complaints and penalise the energy company for non-compliances. Repeated infringements or non compliance must result in turbine removal to protect human health.**

3.4.8 Blayney Council has over the last several decades has been at some pains to attract new population to the Shire, both in the form of encouragement for business and promotion of the Shire as a lifestyle choice for those wishing rurality and "tree change". To some extent this has been successful and there has certainly been an increase in lifestyle blocks particularly at the northern edge of the FCWF site, as evidenced by the density of houses there. It would be ironic, and a breach of faith, if Blayney Council now supported the industrial wind turbine proposal at the expense of this new population base (and rate payers) and, in so doing, removed the very reason that attracted them to the area in the first place.

3.4.9 Further matters regarding Blayney Shire Council's role in the matter of the Flyers Creek Wind Farm proposal is dealt with in greater detail in Chapter 9.

3.5 LAND VALUES

3.5.1 Infigen has stated on numerous occasions that the presence of wind turbines in a district has no impact on land valuations. In fact hosts of wind turbines can increase the value of the land because of the potential for increased income (return on investment) from the lease agreement and annual rentals they received.

3.5.2 There is ample evidence (both tested and anecdotal) that land values of both host farms and neighbouring farms are decreased by the presence of wind turbines. Real Estate agents have attested to this:

- Shane McIntyre, National Sales Manager for Elders Rural Real Estate Services, states: "A proliferation of wind towers adjacent to a property has the same effect as high voltage power lines, rubbish tips, piggeries, hatcheries, and sewerage treatment plants, in that, if buyers are given a choice, they choose not to be any of these impediments to value……. Experts assess the loss of value to be in excess of 30%, and sometimes up to half."[61]
- Graeme Welsh, real estate agent Goulburn, states that people from Sydney wanting to buy retirement blocks are not interested in looking at anything near an existing or proposed wind turbine.[61]

- The contention that wind turbines on farms decrease the land value is also borne out by an interview with a resident host of several wind turbines in NSW where he has successfully appealed the Valuer General to have his land devalued which was approved and therefore has resulted in a decrease in his rate base (personal communication).

3.5.3 The overseas experience also affirms the decrease in land values.

- Investigations in Ontario, Canada, have consistently found a drop in property values of 20 to 40% with properties on the market often taking twice as long to sell

- A study by McCann Appraisal in Massachusetts, USA[20], concluded that "the best available evidence indicates a value loss of 25% or more will occur to homes within approximately 2 miles [3.3 kms] of the turbines." It should be noted that this report dealt with the expected effects of only TWO turbines on the village of Brewster.

- Examples, for instance in New York USA and in Denmark, where falling property values have caused significant problems now leading to legislation being implemented to compensate homeowners and landholders.[29]

- From Spain a personal communication from Ramon Rodriguex, Patrimonio Natural y Cultural de Extremadura (PANACEX) (08/12/2011) outlines the following problems experienced by the proximity of wind turbines installations:

  - Degradation of land escape that affected our rural tourism;

- Problem with noise that affected the possibility to sleep well

- The inability [for] tourism projects in the zone

- Degradation of the hunting activities

- **Devaluation of the price of proprieties in the zone affected by the mills**

- Corruption of local authorities by the multinational firms promoting wind mills farms

- No generation of benefits in the area, not even stable employment

4. COMMUNITY CONSULTATION

Director-General's Requirements - the EA must:

1. include a comprehensive, detailed and genuine community consultation and engagement process must be undertaken. This process must ensure that the community is both informed of the proposal and is actively engaged in issues of concern to them, and is given ample opportunity to provide its views on the proposal. Sufficient information must be provided to the community so that it has a good understanding of what is being proposed and of the impacts. There should be a particular focus on those non wind farm associated community members who live in proximity to the site; the Environmental Assessment

2. must clearly document and provide details and evidence of the consultation process and who was consulted with;

3. clearly identify all issues raised during the consultation process which must be tabulated in the Environmental Assessment; and

4. must state how the identified issues have been addressed, and how they have informed the proposal as presented in the Environmental Assessment. In particular, the Environmental Assessment must state how the community's issues have been responded to.

4.1 SUMMARY OF OBJECTIONS

Community Consultation: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

4.1.1 The community consultative process has been extremely inadequate, and there has been a lack of detailed information available from Infigen Energy.

4.1.2 The proponent has failed to engage with the community and has fostered division within the community.

4.1.3 There has been a tendency to claim other organisations' meetings, minor newspaper articles and other media items as part of the community consultation. Often these have not been relevant to the FCWF proposal.

4.1.4 From a face-to-face point of view there has been a lack of respect, and a dismissive attitude by Infigen to many district residents, particularly if they reflect an opposing view to the FCWF.

4.2 OVERALL COMMENT

Community Consultation has amounted to one event held over 2 days at the Tallwood Hall on Friday 19th November and Saturday 20th November, 2011 and one on one meetings' with a selected few community members.

Infigen Energy's conduct would be better described as "lack of community consultation".

Overall, Infigen Energy's attempt at community consultation has been inadequate and its attempt to convince the community and others that they have fulfilled this role sufficiently is misleading and appears calculated.

Our concerns and questions have never been addressed adequately and our requests for a Public Forum have never been met.

Misinformation, denial and secrecy has created a division within the community and fuelled anger amongst those who will be affected if the project is allowed to continue. Infigen will give no guarantees that we will not be affected.

Neighbours who once relied on neighbours or a family member to lend a hand now have no-one to depend on. Marriages are at breaking point over loyalties to other family members and others are keeping quiet as they don't want to upset their friendships or family members even though they oppose the project. Those we (the FCWTAG) have spoken to are hoping the project never goes ahead.

The Environmental Assessment fails to identify the community disruption that has occurred in this community already or around any community where there is an existing wind farm.

This is an all too familiar story around the world, the lack of community consultation and division of communities. Government Authorities are allowing corporate greed and inadequate policies to divide communities. This has to be stopped and responsibility needs to be taken for the damage that is being done by inappropriately siting turbines too close to communities.

We note that there has been no consultation or instructions from the Director General to consult with Errowanbang Public School or the Department of Education. This school sits in the valley and will be surrounded by turbines overshadowing it, with the closest turbine approximately 1.5 km away and many turbines within an

irresponsible distance. The "Duty of Care" to these children is the responsibility of the Principal of the school and the Department of Education.

4.3 INTRODUCTION

Infigen Energy (FCWF) claims to understand the benefits and needs required to implement an effective program of community consultation as part of the development process.

Flyers Creek Wind Turbine Awareness Group would sincerely like to understand FCWF's concept of community consultation and identifying stakeholders, and the methodology and timing they have used in informing the individual stakeholder groups.

4.4 STAKEHOLDERS

4.4.1 History of the Local Community and Infigen (FCWF)

The proponents of FCWF proposal claim that the initial idea for a wind farm was suggested by a couple of local farmers who contacted Babcock and Brown some years ago describing the Flyers Creek area as being suitable for a wind farm. We note that the Department of Planning's Keiran Thomas wrote to Mr Jeff Bembrick of Connell Wagner Pty Ltd Environmental Consultants for FCWF on 24 November, 2008 stating that on 24 October, 2008 the Director-General of the Department of Planning declared FCWF to be classified as Part 3A and FCWF lodged an application in December, 2008. This project has therefore been in the pipeline for more than 3 years.

Why then was Infigen Energy selective in their community consultation, choosing to ignore the majority of our community (stakeholders) until November 2010 when they sent notification to residents that there would be Community Consultation at the Tallwood Hall on Friday 19th and Saturday 20th November, 2010?

A project overview was received with the notification of the Consultation Days in November 2010 and the only other correspondence has been that some community members received a letter dated January 4, 2011, thanking them for attending the Community Information days at Tallwood Hall.

4.4.2 Stages of Consultation – one two-day community information consultation

In 2008 Infigen Energy installed three 80 metre meteorological masts at the project area potentially visible to nearby neighbours! Most people had no idea what they were and were not informed or consulted. How can this be classed as a key stage of consultation to the community?

Infigen claims that two front page articles (2008 and 2009) in the Central Western Daily (Orange) in the early stages are classed as community consultation. Considering the majority of residents of the Flyers Creek Community live 20 to 30km from Orange and would not frequently buy a newspaper, it would be by absolute chance that residents being affected would have knowledge of these articles.

In November 2010, neighbours within about 3km were consulted. This community consultation at Tallwood Hall on the 19th and 20th November, 2011 was a token gesture. There was no public discussion and most people felt that they had been set upon by a 'salesman'. The walls and tables were adorned with out- dated maps, missing many homes to the northern end of the project and photo montages that really did not depict the true representation of the turbines to be erected. The general feeling from many attendees was that Infigen Energy and Aurecon (the environmental consultancy) representatives were only there to tell us what will happen whether we liked it or not. Our concerns and questions were met only with indifference leaving people angry and upset that none of their concerns were of any relevance whatsoever to Infigen.

Infigen implied that the notification was sent to residents within a 3 km radius. However members of our group and other members of this community that live within 3 kms have advised us that they did not receive notification of this day and found out by chance. In fact these two days over one weekend passed with some local residents unaware that the community consultation had ever taken place.

Why was a 3 km radius deemed appropriate, when people at much greater distances than 3 kms will be impacted and are part of the Flyers Creek Community?

Infigen also state that multiple advertisements were placed in the Central Western Daily, he Blayney Chronicle and the Local ABC Radio during the two weeks prior to the community information days. This is a rather hit and miss approach to informing a community that will be heavily impacted by a major industrial development the scale of the proposed Flyers Creek Wind Farm.

The objective of the Community Information Days was to provide detailed information on the proposed project, answer questions about the project design, and to obtain feedback and understand further issues of relevance to neighbours. As we can see this was a mere fallacy.

Infigen Energy states that the majority of attendees at the Community Information days were supportive of the proposed development. Do they have a true confirmation of this and what part of the community are they talking about? **The immediate consequence of this community information day was the formation of the Flyers Creek Wind Turbine Awareness Group by the many district residents who in fact did not support the proposed development**.

Infigen states that a total of 31 attendees (60% of registrants) completed questionnaires; this may or may not be an accurate representative sample of the community! Only 49 people registered their attendance and several attendees chose not to register their details. Infigen's letter dated the 4th January 2011 stated about 60 people attended.

There are 22 or 23 landowners hosting wind turbines. Recent correspondence to these hosts from Infigen Energy has encouraged these landowners to attend any and every event that promotes the proposal in any way. The purpose of this strategy appears to make sure that there is plenty of positive feedback which will then feed into the local media. There are approximately 160 residences within a 5km radius of the wind farm. Additionally the village of Carcoar, population 385, and Mandurama, population 187, both have a setback of 5 km. There are many more residents between the 5 - 10km bands. These numbers would suggest that something is wrong with the way Infigen has informed the community of the consultation days at Tallwood. Attendees who did not register probably have done so wishing to remain unknown because of the differences of opinions with friends and family.

Concerns were expressed by many about the consultation process and the feedback the FCWTAG has heard anecdotally from the majority who were there repeats itself. They felt belittled and were given no information or answers of any consequence.

Infigen Energy was sent a letter by the Director General Mr Sam Haddad on 16th August, 2011 directing them to adequately fulfil their Community Consultation obligations. Our community since this time has had no further consultation with Infigen Energy.

4.5 PROJECT DESIGN CHANGES AS A RESULT OF COMMUNITY FEEDBACK

Why does Infigen Energy believe that removing turbine #1 and #2 will improve the visual impact? All this does is remove 2 out of 46 turbines and we are supposed to be grateful for the concession. What remains will still be, should the proposal be passed by the State Government, a major industrial monstrosity in a magnificent rural landscape of undulating hills and rural landscape rich in agricultural history. Most of this community would disagree that #1 and #2 were the major issue at the consultation days! Was removing turbine #1 and #2 an attempt at Public Relations?

Infigen Energy states that moving turbine #31 just 100 metres north from the original location to place it on the "other" side of the top of the hill will decrease the visual impact. These turbines could be up to 150 metres tall so moving a turbine 100 metres is going to make little difference to any impact it will have. Who was this to satisfy?

4.6 ISSUES RAISED DURING CONSULTATION

Regarding negotiation and agreements entered into by landowners, one would have to ask whether these agreements were entered into with the full knowledge of the reported

impacts of wind turbines throughout the world. And did the landowners fully understand the implications of what they signed? Were these contracts entered into willingly?

Neighbours and community members have not been taken into consideration when designing the layout at all. Noise and health impacts are being reported up to 10km and more away from wind turbine developments, so why, when turbines are set so close to homes in this community, can Infigen Energy state that they have any consideration for human life?

Some people may view turbines as graceful structures but they have no place in a rural setting; they are industrial developments and nothing less.

People are very aware of the devaluation of property that has been reported world-wide; once again community consultation is misrepresenting the truth. When was the NSW Valuer General Report documenting no devaluation to farms and residences in areas hosting turbines? We know of at least one case in NSW where an application to the Valuer General resulted in the value of a property with turbines on it was reduced, with a concomitant reduction in property rates.

Two of the members of the FCWTAG have placed their home on the market. Their real estate agent has communicated by email that prospective buyers are not interested because of the FCWF proposal and in recent months there have been no inspections when historically this is a popular area for prospective buyers of small acreage holdings.

Human health and safety impacts are of major concern world-wide. Infigen Energy is negligently telling members of the community that there is no evidence of this and is using statements out of context.

Traffic effects can only be seen by this community as a major threat to our already frail road infrastructure and the safety on such. Members of this community have never had this issue addressed adequately by Infigen Energy or seen reports to address this issue. The Environmental Assessment also deals with this inadequately as there is no proper Traffic and Transport Management Plan available.

Inadequate consultation and awareness of the project is still a major issue and even though the FCWTAG has tried to inform the public there are people who are unaware of the extent and timing of this proposal. Comments have been received by the members of the FCWTAG that some people remain totally unaware that this project could happen.

Infigen Energy claims that normal pastoral activities can be continued! If humans can be affected why can't livestock? Where the evidence to suggest that there is is no effect on livestock? Questions in regards to reliability and efficiency have never been answered with any empirical scientific evidence. There are reports both in Australia and world-wide of wind energy's inefficiencies.

Comment re photographs on Page 6-14:

Plate 6.1 Discussion with stakeholders at Tallwood Community Hall Information Day. 2 of the 3 ladies are members of the Flyers Creek Wind Turbine Awareness Group, along with Infigen Employee.

Plate 6.2 Jonathan Upson (Infigen Employee) with a Government employee who regularly attends promotional events and public meetings that are arranged by the FCWTAG.

On the whole the proposed Flyers Creek Wind Farm project has been handled in a very unprofessional manner with very little community consultation or regard for human life. The secret negotiations that apparently took for years before the community was informed of the project has been destructive to community cohesiveness and suggests there has been something to hide.

4.7 MYTHS OF PUBLIC CONSULTATION

DATES	MEETING	COMMENT
19-20/11/2010	Community consultation – information days, Tallwood Hall. Arranged by Infigen Energy.	This is the **only meeting** arranged by Infigen. Publicity was poor. Was not presented as a question and answer format where people could have the opportunity to educate themselves about the FCWF proposal. Attendees were separated so that it was often a one-on-one conversation, with many people feeling isolated, overwhelmed and patronised.
14/03/2011	Blayney Shire Council meeting	FCWTAG asked and were permitted to speak briefly to Council (5 minutes + 2 minute extension). At the same meeting Infigen was given permission to speak to Council for one hour 'in camera'. This FCWF proposal is a public issue and should have been aired publicly at the Council meeting.
27/04/2011	ECCO Group, Orange arranged a public meeting to discuss the virtues of wind energy. Presentations by Jonathon Upson (Infigen) and DEWWC representative.	This meeting has been classed as a FCWF community consultation by Infigen, yet it had nothing to do with Flyers Creek, did not discuss it and certainly did not promote it to Flyers Creek residents.

DATES	MEETING	COMMENT
28/11/2011	Community Climate Change Group, Bathurst arranged a public meeting – same format as above.	Again this has been classed as community consultation by Infigen. Again it had no relevance to Flyers Creek.
13/10/2011	Meeting called by Infigen in Orange to promote the establishment of a Flyers Creek Wind Farm Co-op, which would purchase one turbine from the FCWF.	This has been classed as community consultation. The purpose of the meeting was not information relating to the FCWF but a "sales promotion" for the co-op. Heavily attended by Infigen employees and associated consultants.
14/10/2011	Ditto. Meeting held in Bathurst	Ditto as above.
28/11/2011	Community Forum organised by Blayney Shire Council (at the request of members of the FCWTAG) to assist the Council assess community opinion in compiling its submission on the FCWF EA.	This also was classed as community consultation and was promoted on the Infigen website as being an Infigen initiative. This announcement has since been removed from the website and Blayney Council's calling of the meeting was acknowledged. The meeting was arranged such that Infigen (Jonathon Upson) gave a short presentation with little opportunity for questions and answers.

4.8 THE ROLE OF GOVERNMENT EMPLOYEES

Infigen's association with Government employees is questionable, and of concern to the FCWTAG and to the issue of community consultation. We believe that these employees should remain impartial to any company's dealings and should be seen to be neutral. Instead repeatedly over the last year we have seen government employees attend meetings to support and sell wind energy to the communities of Orange and Bathurst and these very same employees having been asked by Infigen Energy's Senior Development Manager to attend meetings to report back to him (personal communication).

There are definite issues of propriety in our view. These Government representatives promote Infigen Energy as being supported by Government. There are community members who tend to unquestioningly believe that whatever the Government says and publishes must

be trusted and accepted. While it is allowed that Government employees may hold personal views in private life, there is no place for bias and in some cases persuasion for such a person in the pursuit of his public duties.

4.9 CONCLUSION

How does Infigen get away with presenting talks and sales events to the general public in Orange and Bathurst, and call it community consultation, when our repeated requests for a community forum are denied and avoided? On many occasions our group has requested technical information and answers to our concerns only to be supplied with vague statements or have our questions dismissed as nonsense. Infigen have never been able to supply us with any independent data, research or technical information.

We still do not have an accurate description, size or model of turbine. The information we have access to from Infigen is full of misinformation, inaccuracies and lacking in detail.

We do note that Infigen CIO, Jillian Carmody, who spoke exclusively to CIO Australia, made the statement, *"Availability of farms is extremely important, and by having intelligent systems, it was easy for them to slice and dice the information as needed for reports."*

Carmody said the quality of Infigen's data was another reason for the deployment. *"The meaning of data coming out of those farms wasn't very consistent either,"* she said.

This begs the question that if the data from the wind farms wasn't consistent one would then have to question the accuracy of anything being presented by Infigen Energy. Further the question must be asked: W**hat misinformation has Infigen Energy been feeding the public and government authorities?** Chapter 5 in this submission (Noise and Health) goes some way to answering this question.

4.10 SOURCE MATERIAL

The following sources were used in this Chapter on Community Consultation and is either publicly available or can be produced on request.

Department of Planning - Letter to Mr Jeff Bembrick dated 24th November, 2008

Infigen Energy Notification of Community Consultation Days 19th and 20th November 2011 and Project Overview dated 4 November, 2010

Infigen Letter dated January 4, 2011

Copy of letters sent to Landowners by Infigen who have signed Leases with Infigen. Date 24th October, 2011 and 22nd November, 2011

Copy of Blayney Shire Council Facsimile dated 4 March 2011

Minutes of The Blayney Shire Council Ordinary meeting 14 March, 2011

References from Infigen Energy's website relating to Co-op meetings in Orange and Bathurst

Advertisement from Western Advocate relating to Infigen Energy's Jonathan Upson speaking at the Bathurst Community Climate Action Network meeting.

Letter from NSW Planning and Infrastructure Office of the Director General to Jonathan Upson 16 August 2011

Copies of emails from Flyers Creek Wind Turbine Awareness Group to Jonathan Upson of Infigen Energy requesting a Public Forum and emails requesting answers to questions.

Accounts by our group members on Infigen talks to outside community groups.

Letters referencing personal experience with Infigen Energy and consultation issues.

Article from CIO Summit 2011 Jill Carmody CIO Infigen Energy

What if you could own a wind turbine?

Minutes of Meeting Infigen's Wind Co-op 8th November 2011

Copies of emails between real estate agent and Flyers Creek potential property vendor about failed sale of property due to FCWF proposal.

5. NOISE IMPACT AND HEALTH IMPLICATIONS

Director-General's Requirements

- the Environmental Assessment must:

1. include a comprehensive noise assessment of all phases and components of the project including turbine operation, construction and traffic noise. The assessment must identify noise sensitive locations (including approved but not yet developed dwellings or subdivisions with residential rights), baseline conditions based on monitoring results, the levels and character of noise (e.g. tonality, impulsiveness etc) generated by noise sources, noise criteria, modelling assumptions and worst case and representative noise impacts.

2. determine noise impacts under operating meteorological conditions (i.e. wind speeds from cut in to rated power), which may include impacts under meteorological conditions that exacerbate impacts. The probability of such occurrences must be quantified;

3. if any noise agreements with residents are proposed for areas where noise criteria cannot be met, provide sufficient information to enable a clear understanding of what has been agreed and what criteria have been used to frame any such agreements;

4. clearly outline the noise mitigation, monitoring and management measures that would be applied to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been incorporated;

5. include contingency strategy that provides for additional noise attenuation should higher noise levels than those predicted result following commissioning and / or noise agreements with landowners not eventuate; and

6. include an assessment of vibration impacts associated with the project.

7. be undertaken consistent with the following guidelines (or as otherwise agreed with the DECCW):
   - Wind Turbines - the South Australian Environment Protection Authority's *Wind Farms - Environmental Noise Guidelines*, 2003;
   - Site Establishment and Construction - *Environmental Noise Control Manual* (NSW EPA, 2004);
   - Traffic Noise – *Environmental Criteria for Road Traffic Noise* (NSW EPA, 1999);
   - Vibration – *Assessing Vibration: A Technical Guideline* (DECCW, 2006).

5.1 SUMMARY OF OBJECTIONS

Noise Impacts and Health Implications: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

5.1.1 Aurecon (Infigen's environmental consultant) has used the GE2.5xl-2.5 MW wind turbine to model noise impacts which significantly "under-represents" the eventual model that will be used, introducing significant sources of errors. **The Director General should refuse the FCWF proposal on these grounds alone.**

5.1.2 The measurement of background sound and the modelling of noise impact of the proposed FCWF is flawed and inaccurate.

5.1.3 There is no measurement of prediction of ***tonality*.**

5.1.4 Monitoring of sound at Capitol Wind Farm by The Acoustic Group has found non-compliance of audible sound levels, and significant levels of infrasound also above allowable levels. This work casts into doubt the ability of wind turbines operated at Flyers Creek to be able to comply in any way with acceptable and regulated levels of noise. **The Director General should refuse the FCWF proposal on these grounds**.

5.1.5 The matter of noise guidelines and measurement, tonality and other issues are currently being examined by the South Australian courts and **no decision regarding the FCWF proposal should be contemplated until these matters are determined.**

5.1.6 Effective monitoring and compliance regimes must be imposed by the planning authority at the outset. None are proposed or contained in the Flyers Creek Environmental Assessment and it should not be approved on this basis.

5.2 NOISE – CRITIQUE OF MEASUREMENT AND MODELLING

The Flyers Creek Wind Turbine Awareness Group is indebted to the following for their critiques, analyses and additional information concerning the Environmental Assessment's noise studies and conclusions:

- The Acoustic Group (S. Cooper), Lilyfield, NSW
- L. Huson & Associates Pty Ltd, Consulting Scientists in Acoustics, Victoria
- Margaret Conn, Solicitor, Mudgee, NSW

5.2.1 Choice of representative wind turbine model

The choice of the GE 2.5xl 2.5MW wind turbine unit to "represent" the turbine that is to be installed at Flyers Creek, and upon which all sound studies are modelled, is flawed and casts into doubt all scenarios and conclusions described in the EA (both by Infigen and by ViPAC, the company employed to carry out the sound assessment).

The EA states that the wind turbine chosen will be between 2 to 3 MW generation capacity. Assuming this will be 3 MW this represents an increase of 20% over the representative GE turbine. If, as has been suggested by Infigen's Senior Development Manager at Infigen's Co-op Forum 13th October 2011 at Orange, the turbines will be "up to 3.3 MW", this will represent an increase of 32% generation capacity over and above the turbine model used for all calculation in this Environmental Assessment.

Moreover the GE turbine is 85 metres hub height, whereas the maximum height of 100 metres is alluded to in the EA. If, as seems certain, the turbines will be at the top end of the range of heights given – hub height 100 metres, total height 150 metres – then this will introduce another error of at least 17%.

Notwithstanding the detailed analysis of the flaws in the noise assessment following, the Flyers Creek Wind Turbine Awareness Group (FCWTAG) believes the Director-General should refuse to consider the Environmental Assessment on these grounds alone.

5.2.2 Time of Background Noise Monitoring

The Background noise monitoring was conducted between 13th November to 24th December 2009. The object was to obtain background noise from which to model the impact of the additional noise expected from the operation of wind turbines at the FCWF.

Generally the background noise is different in the Winter months compared with the Summer. For example, cicadas are active in the Summer and contribute to background noise. However they are inactive in the Winter months and make no contribution to background noise levels. Accordingly the measurements should be taken in the middle of Winter to record the lowest possible background noise levels in line with conservative and precautionary principles.

Therefore the results reported from the noise monitoring survey are not representative and thus unsuitable for use in modelling predicted noise levels, and accordingly the Environmental Assessment is invalid, misleading and rejected.

5.2.3 Noise Guidelines

1. The relevant noise guidelines for the Flyers Creek Wind Farm are the South Australian Environmental Protection Authority's ***Wind Farms - Environmental Noise Guidelines (2003).*** The Background Noise Monitoring Survey Report and the Noise Impact Assessment for the project were carried out for Aurecon Australia by the South Australian based **Vipac** Engineers and Scientists. It is acknowledged in the Appendices G1 and G2 that the 2009 Guidelines have been applied where practicable or as appropriate.

2. The issue of the extent of noise actually generated by wind turbines, together with the role of the South Australian Environmental Protection Authority's *Wind Farms – Environmental Noise Guidelines (2003)* in setting valid standards for noise limits, prediction and compliance, is currently under detailed scrutiny in the South Australian Courts in the "Quinn" litigation. The extent of scrutiny and specificity of the attacks on adequacy and validity of the Guidelines and associated compliance testing is that:

3. no project approval for the Flyers Creek Wind Farm should be contemplated until the matters under examination in South Australia have been determined.

4. The Director-General Requirements for Flyers Creek require a comprehensive noise assessment and determination of noise impacts. In light of the South Australian litigation, these matters have not been adequately addressed by the Vipac data or by the proponent. A comprehensive noise assessment and determination of noise impacts cannot be made for the project until the issues raised by the current South Australian litigation have been resolved.

5. On 7 November 2011, the Full Court of the Supreme Court of South Australia ([2011] SASCFC 126) allowed the appeal from the Environment, Resources and Development Court (the ERD Court) in the matter of Quinn & Ors v. Regional Council of Goyder & Anor [2010] SAERDC 63. At issue in the proceedings is the approval of the Hallett 3 wind farm in the North Mount Lofty Ranges. The approval given by the Goyder Council was initially confirmed by the ERD Court but the ERD Court decision has now been set aside by the Supreme Court and the matter will be re-heard in early 2012.

6. Although the case covers a variety of issues specific to the Hallett 3 Project and the relevant council Development Plan, the South Australian EPA Wind Farm Noise Guidelines were at the heart of the examination in relation to predicted wind farm noise levels, wind farm noise assessments and compliance testing and as such have direct relevance to the FCWF .

7. A series of detailed flaws in the operation of the Guidelines has been outlined to the Court by Professor Colin Hansen of Adelaide University. Professor Hansen's qualifications are unimpeachable. He is a Professor at the University's School of Mechanical Engineering with a First Class Honours degree in Mechanical Engineering and a PhD in acoustics. He is a Chartered Professional Engineer and a Fellow of Engineers Australia, the Australian Acoustical Society and the International Institute of Acoustics and Vibration. He has worked internationally and within Australia on acoustic and vibration projects. He has authored or co-authored ten books, edited 2 books and authored 8 chapters in other books, all on acoustics or vibration. He has published over 250 refereed journal papers and conference proceeding papers on acoustics and vibration. He has served as President of the International Institute of Acoustics and vibration. He was awarded the 2009 Rayleigh Medal by the British Institute of Acoustics for outstanding contribution to acoustics. He has taught, researched and consulted in acoustics at the University of Adelaide for the past 25 years.

5.2.4 Noise Assessment and Background Noise Monitoring at Flyers Creek

The matters raised, in detail, by Professor Hansen, are directly relevant to the Flyers Creek Wind Farm, to the Noise Assessment and Background Noise Monitoring carried out by Vipac, are as follows:

1. **The EPA Guidelines specify base levels in terms of the LAeq descriptor and then in the compliance checking procedure, the Guidelines use the LA90,10 descriptor.** The 2003 Guidelines set a predicted equivalent noise level which should not exceed 35dB(A). However the compliance checking procedure for this level refers to the loudest A-weighted noise level that occurs in the quietest 10% of the time and it ignores the noisiest 90% of each measurement period. The two descriptors do not measure the same thing. It is well established that LA90 underestimates the actual LAeq generated by a significant margin. As Professor Hansen says: "It is well known that LA90,10 noise levels are always less than LAeq,10 levels by between 2 and 4 dB(A) (as stated on page 56 of "The Assessment and Rating of Noise by Wind Farms" - ETSU-R-97), so this method of compliance checking significantly underestimates the actual LA eq,10 noise levels due to the wind farm.

2. **The effect of amplitude modulation with wind turbine noise is such that the difference between the measured LA90,10 level and the LAeq,10 level will be even more exaggerated.** LA90 may well be 5 dB less than the LAeq.

3. In relation to the background noise level specification, the EPA Guidelines state that the allowed noise level is 5 dB(A) above the LA90 background noise without the wind turbines. The background noise should be as determined by the data collection

and regression analysis procedure recommended under the Guidelines. **This procedure is flawed as the use of a regression line through a large number of LA90 levels to define the background noise level ignores the fact that there are many 10 minute intervals when the actual background noise is well below this artificial level and many times, this difference exceeds 20 dB(A).**

4. There are flaws in the wind speed range and its relationship to sound power which formula forms the basis of predicted noise levels. In the 2009 Guidelines, the EPA acknowledges that turbine noise increases with wind speed with the Guidelines stating that noise levels should increase between .5 and 1.5 dBb(A) for each 1 m/s wind speed. The Guidelines however suggest that, despite this, any increase in wind speed will be masked by the increase in background noise levels due to stronger wind. **This assumption is in error as background noise levels at the receiver do not necessarily increase with wind speed at turbine locations.** In some weather conditions, there will be strong hill top wind at turbine location but hardly any wind at receiver location on the valley floor. The assertion that background noise increases as wind speed at the turbine nacelle increases is often not true and there will be many occasions when wind turbine noise far exceeds the background levels at the receiver location. Ignoring the 2009 Guidelines, the manufacturer's assumptions that maximum sound power is produced at a speed slightly less than rated power are flawed and calculations automatically are likewise flawed.

5. For noise measurements, the most relevant wind speed is at the turbine nacelle. The formula provided in IEC 61400-11 is for determining wind speed at a height of 10 metres. This formula was applied by Vipac in the project appendices. The accuracy of these estimates depends on the assumed wind shear value which can vary dramatically with location and weather conditions such that **the accuracy of the measure is flawed!**

6. The relevant predictive noise models for wind farms depend on **sound power calculations** as set out in the Vipac data at Appendix G2. The method of predicting noise from a wind farm under the Guidelines requires taking the sound power level produced by each turbine and applying a noise propagation model to predict the noise level. The sound power radiated by a wind turbine is a measure of the total sound energy generated by the turbine and is only a function of the turbine **itself**. To measure sound properly around a turbine would require at least 20 sound pressure measurements on a spherical surface at a distance of about 200 metres. An approximate method is detailed in the standard IEC 61400-11. This method involves the unjustified assumption that measuring the sound pressure level at a **single point** on the ground at a distance from the turbine equal to the nacelle height plus one blade length is representative of the **average** sound pressure. Another unjustified assumption is that sound radiates uniformly.

7. Because the noise radiation from the blades will actually be **highly directional**, the measurement of the sound power on the ground according to the standard will be an **underestimate** of the true sound power. Directivity is affected by wind which refracts waves, the amount of diffraction being dependent on wind gradient which is in turn dependent on wind speed at 10 m altitude and ground roughness. Simply, **the method specified in the standard and used by manufacturers to measure turbine sound power levels will underestimate actual sound power levels particularly at distances.**

8. It is well documented that **substation noise** is dominated by **transformer noise** and that transformer noise is characterized by very pronounced ***tonality***. **Predicted transformer noise levels should be increased by 5 dbA before being combined with the wind turbine noise levels.**

9. There is no proper account taken of the ***aerodynamic modulation*** of wind turbine noise. **The noise monitoring recommended in ETSU-R-97 is totally ineffective in protecting residents from aerodynamic modulation noise because the specified noise descriptor (LA90,10) ignores the noisiest 90% of each measurement period and gives a result based on the loudest noise in the quietest 10% period.** Aerodynamic modulation noise can be heard at considerable distances from the turbines and can be difficult to detect closer to them. It is significantly affected by **atmospheric** conditions.

10. **CONCLUSION:** As a result of emerging noise data from the Hallett wind farms, the issues raised by Professor Hansen will now be re-argued and reviewed by the South Australian Courts. At the time of hearing, there was little data available from the Hallett projects to verify Professor Hansen's assertions. If these assertions are found to be accurate, the **noise model predictions for the Flyers Creek Wind Farm will not be accurate** and will be **conservative**. Aurecon has stated that "An accurate predictive noise model was used to assess the resultant noise levels at residences surrounding the wind farm." (12.8.2) The Hallett litigation directly challenges this assumption. **16 of the 34 turbines** of Hallett 2 are now **turned off at night** pending compliance data. **They will not be turned on until the above matters are resolved and project approval of Flyers Creek also needs to wait until this occurs and is resolved.**

5.2.5 Problems with FCWF noise data

There are **other noise issues** highlighted by "in progress" South Australian litigation which have particular relevance to the Flyers Creek noise data. **They demonstrate problems with the noise data such that the Director-General's Requirements in this area cannot be said to have been met.**

1. ***Tonality***

The Noise Impact Assessment affected by Vipac was based on the GE 2.5x1 generator. At the time of modelling, the actual turbine had not been settled. This is usual for projects of this type as the actual purchase of turbines is not made until after project approval. Nevertheless, Vipac will have relied on advice from the proponents and it is reasonable to assume that the preferred turbine is the specified and nominated turbine. Aurecon state "For the purposes of the noise assessment the noise characteristics of the GE 2.5x1 2.5MW turbine have been used. This turbine was selected for the noise assessment as being the turbine with the noise levels **typical** of the turbines that are under consideration for this project." (12.3 at p.12-2 in the EA)

In relation to the critical issue of ***tonality*** and the GE 2.5 turbine, Vipac (Appendix 2, p.9) state "There was **limited published data from the manufacturers outlining any detectable tones or any other significant characteristics such as impulsiveness, modulation or low frequency components in the sound power spectrum.**" So there is an acknowledged lack of precise data in relation to these characteristics. However, what data there is, suggests **tonality is present**: "We note that a preliminary report for the GE turbines show that tone at 7m/s wind speed ... Additionally, we are aware that GE are actively working on **eliminating any measurable tonality** in their 2.5MW turbine, and at the time of installation, tonality **may not** be present in the near field of the WTG." (writer's emphasis).

In the circumstances outlined above, **the only appropriate course is to add the required 5dbA penalty for tonality to all noise modelling for the project. It is completely unacceptable and inappropriate to provide noise modelling based on a turbine which has acknowledged tonality and not to include a tonality penalty in the modelling.** It is notable that Professor Hansen states that the 5dbA penalty for tonality in the Guidelines is itself likely to be **conservative**.

The Vipac "Noise Model" report goes on to state in relation to tonality: "**Additionally, this tone (measured in the near field) is likely to attenuate, and be masked by background noise effects at the nearest residential receiver (and therefore not audible, and penalty should not be set**)." This is **wrong.** There is no factual or scientific basis for this statement. In many cases, masking noise could well be other noise generated by the turbine being measured. However mid and high frequency turbine noise attenuates more rapidly with distance from turbine such that low frequency tonal noise is likely to be **more** noticeable at greater distances from the source. The masking noise itself is likely to reduce over distances such that the noise

effect of the ***tonality*** **will be especially significant at distance** and worse when there is a relatively high speed at turbine height and little wind at receptor.

The **established failure** of the turbines at Hallett 2 to comply with noise Guidelines has been detected as a result of ***tonality***. **The tests carried out by Vipac at Hallett 2 did <u>not detect tonality</u> and residents have endured some 2 years of significant adverse impacts.**

Professor Hansen commented to the Supreme Court of South Australia: "The VIPAC data also shows peaks in the acoustic frequency spectrum that would indicate the possibility of tonal noise at frequencies of 223 HZ and 1110HZ, in addition to that at 125HZ. However their tonality analysis, carried out according to the standard IEC 61400-11, indicated that the noise did not have an audible tonal characteristic.....the fact that VIPAC was unable to detect an audible tonal characteristic in the noise generated by the Hallett 2 wind farm may be the consequence of a **data analysis error** as the analysis is complicated and errors are possible."

2. ***Substations***

There is no 5dbA penalty for the ***tonality*** present in substation noise. It is well established that substation noise is dominated by transformer noise and transformer noise is marked by very pronounced tones at 100HZ, 200HZ, 300HZ and 400HZ. The predicted transformer levels should be **increased by 5 dbA** before being combined with wind turbine noise levels.

The stated assumption that maximum loading and noise generation from the substation will occur during periods of strong winds and associated high background noise levels of over 40dB(A) **cannot be sustained**.

The stated assumption that "Due to distance between the substation and the receivers the 100Hz frequency component of transformer noise is not expected to be significant at the receiver locations" is **wrong**.

3. ***Background Testing***

The proponent states (12.6.1): "In setting noise amenity criteria pertinent to wind farm projects, it is recognized that, whilst background sound level can be relatively low at low wind speeds, the wind turbines do not operate at these speeds." This flies in the face of long established evidence relating the **difference in wind speeds at receptor location and turbine location.** The proponent continues "Also, as wind speed

increases the background sound levels tend to increase." **Another unjustified assumption.**

The flaws in the regression analysis for background noise testing have been highlighted by and are under scrutiny in the **Quinn litigation**. The necessity of taking background measurements specifically when wind speeds are low has also been highlighted given wind farm noise predictions for ridges and valleys when winds are higher at turbine than in the valleys.

This is not addressed in the Vipac data for Flyers Creek. The importance of proper microphone siting is also highlighted by the Hallett litigation and there is insufficient information in the Vipac data to determine the adequacy or otherwise of placement issues.

There are 70 non-host residences affected by the project and a school within 3 km of the turbines. Out to 5 km the non-host residences rise to approximately 150 according to the mapping supplied by Aurecon (additional residences have not been marked so the figure is **inaccurate**). The Villages of Carcoar (population 218 – 2006 census) and Mandurama (population 150) are both 5 km from the proposed wind farm and these would add significantly to the non-host resident numbers. Despite such a high level of surrounding population, there have been background tests carried out at only 5 residential locations. The extrapolation to "non-logged residences" has been effected by "a background noise survey" which is **not produced** in the Annexure G2. Sites have then been allocated to a "similar ambient acoustic environment" which is precisely what the purpose of background testing is supposed to determine. As the Vipac report also admits: "**it is not possible to be definitive on all of these items as these factors vary over time."**

4. ***Limitation of Testing - Exclusion of Higher Wind Speeds***

It is argued in the Quinn/Hallett litigation that there are flaws in the wind speed range which forms the basis of predicted noise levels. The assumption underlying the limited range seems to be that the wind turbine manufacturers state that their wind turbines produce a maximum sound power at a wind speed slightly below that corresponding to the rated power and at higher wind speeds, the sound power will be slightly less than this maximum. There is an assumption by the EPA that at higher wind speeds, there will be a masking effect of the increased turbine noise by increased wind noise. **A determination of these issues is expected by the South Australian litigation and is critical to Flyers Creek noise modelling as the modelling appears to be based on a maximum wind speed of 12ms.**

5. *Compliance Testing and "Good Faith" Issues*

The projected noise impacts for Flyers Creek are significant on any analysis – turbines which have an existing ***tonality*** problem but no tonality is assumed in projected figures, non-compliance with noise standards even on existing data such that it is projected that a number of turbines will have to work in "noise reduction mode", and a school and 70 residences in the surrounding areas which, on established evidence, **will be impacted**.

Aurecon has **no proposed noise compliance assessment protocol**. They have not stated what will occur in the event of non-compliance. In the event of complaints from "more distant relevant receivers," these complaints "will be investigated." Ultimately, "necessary measures to achieve compliance" will be implemented. Aurecon states that it must be mindful that "If a large number of wind turbines were operated in noise reduction mode, the decrease in electricity generation would be significant."(12.7.1)

Vipac's position in relation to potential impacts for which compliance and monitoring may be required is clearly out of touch with reality and scientific fact - "The psycho-acoustic response or annoyance level to a new noise source is subjective ....but is unlikely to be significant with wind farm noise ..."

Aurecon express a similar attitude –

The current South Australian litigation highlights the fallacy of accepting that wind farm proprietors will be reliably compliant and self-monitoring. It was asserted and accepted for all noise predictions that there would be and was, no tonality with the Hallett turbines. But ***tonality*** was present and evidence in the hands of AGL established tonality **prior to wind farm construction**. The residents of Hallett 2 suffered enormous disturbance to their lives and well being for two years while complaints were ignored.

Wind data in the hands of AGL was <u>not fully or properly discovered</u> to the complainants in the legal proceedings. The litigation may deal will this in due course but in the meantime, it demonstrates that **effective monitoring and compliance regimes must be imposed by the planning authority at the outset. <u>None</u> are proposed or contained in the Flyers Creek Environmental Assessment and it should <u>not</u> be approved on this basis.**

5.3 THE ACOUSTIC GROUP (STEVEN COOPER)

PEER REVIEW OF ACOUSTIC ASSESSMENT FLYERS CREEK WIND FARM

Steven Cooper of The Acoustic Group, Sydney, was commissioned by FCWTAG to provide an analysis of the acoustic measurements and modelling performed by Vipac and presented in the FCWF Environmental Assessment. The Acoustic Group's report is designated **Appendix 2.**

5.3.1 EXECUTIVE SUMMARY OF THE REPORT (For Full Report See Appendix 2)

The Acoustic Group has performed a desk-top review of the acoustic documents comprising the acoustic assessment for the Flyers Creek Wind Farm. Further, The Acoustic Group has conducted preliminary sound monitoring at an existing operational wind farm (the Capital Wind Farm) which was approved in New South Wales on the basis of similar analyses, guidelines and reports to that provided for the Flyers Creek Wind Farm. The conclusions of The Acoustic Group are set out below.

The Background Noise Monitoring Survey Report has been found to be flawed:

• Noise data that has been supplied does not truly reflect ambient background level;

• Logger positions with respect to residences and trees have not been adequately identified to enable assessment;

• One "residence" had two different logger positions;

• There are unexplained discrepancies in wind speed data;

• There is no evidence re essential wind speed correlations;

• There is no evidence that wind direction has been analysed for correlation to background levels nominated for residential receivers

The Noise Impact Assessment (Chapter 12, Environmental Assessment and Appendix G2 Noise Impact Assessment) has been found to be inadequate and likely to be inaccurate. It fails to properly examine:

• The lack of data for the type of turbine assumed;

• An appropriate sound power level for modelling purposes that reflects actual operating turbines;

- Modulation, interference patterns, low frequency noise and infrasound;
- The impact of meteorological conditions on sound propagation;
- Identify the actual noise impact of the wind farm;
- Substation noise, construction noise and transmission line noise.

There has been found to be a fundamental inadequacy in the acoustic assessments in that they do not attempt to discuss or examine the actual noise impact for the community. Such an analysis is required by the Director-General's Requirements and by the principles contained in the South Australian legislative framework.

The adequacy of the South Australian Guidelines in protecting the amenity of the community surrounding the wind farm has been examined. Fundamental inconsistencies and omissions in the South Australian legislative framework relating to wind farm noise have been identified.

There are fundamental inconsistencies and omissions in relation to Indicative Noise Levels and in relation to low frequency noise and infrasound. It has been found that the Guidelines establish criteria which conflict with their own objectives.

It has been found that application of the South Australian Guidelines cannot be reconciled with the New South Wales Protection of the Environment Operation Act (POEA) nor with the New South Wales Industrial Noise Policy. The proposed wind farm will result in the generation of offensive noise breaching the New South Wales legislative framework.

Initial results from preliminary testing at the Capital Wind Farm have been found to confirm concerns that the Flyers Creek Wind Farm will result in the generation of intrusive and offensive noise. Testing has demonstrated that the Capital Wind Farm is generating audible noise significantly above predicted levels and above levels prescribed by its consent at the residential site tested. These noise levels validate complaints of significant adverse impacts.

Preliminary testing at the Capital Wind Farm demonstrates low frequency noise and infrasound at levels and fluctuations likely to impact on residents.

On the basis of the above, The Acoustic Group has found that approval of the Flyers Creek Wind Farm proposal would expose the surrounding community to

intrusive and offensive noise and would leave the approval authority, land owners and the proponent open to litigation and complaint accordingly.

5.3.2 CONCLUSIONS FROM THE REPORT (See Appendix 2)

The Flyers Creek Wind Farm should not be approved.

The Background Noise Monitoring report is flawed. The noise data does not truly reflect ambient background levels. Logger positions with respect to residences entry have not been adequately identified to enable assessment. There are unexplained discrepancies in wind speed data and there is no evidence in relation to essential wind speed correlations. There is no evidence that wind direction has been analysed or correlated to background levels.

There is no analysis in relation to noise emitted from the wind farm taking into account various weather conditions, and in particular the presence of temperature inversions with and without downwind effects.

The Noise Impact Assessment fails to deal adequately with the lack of data for the type of turbines assumed.

The computer prediction provides tolerances greater than that nominated in the predicted levels, which therefore presents concerns in relation to the adequacy of the assessment.

There is no adequate, specific examination of substation noise, construction noise or transmission line noise.

There is no analysis of the noise impact of the wind farm as a whole. Such an analysis is required by the Director-General's Requirements and by the principles contained in the SA legislative framework. Insofar as the Assessment uses the WHO guidelines in relation to wind turbines and sleep, these guidelines are outdated and insufficient to deal with sleep disturbance from wind turbines in rural areas.

The South Australian Guidelines are inconsistent and contradictory within their own legislative framework and failed to meet their own objectives.

The SA guidelines permit noise from a wind farm that is intrusive. The NSW INP defines intrusive noise limit is background +5 dB(A). The base level from the SA Guidelines is 35 dB(A). Where one has a background level below 25 dB(A) and a limit of 35 dB(A) then noise at the “strict noise limit” must by definition be intrusive.

The Acoustic Assessment for the proposed Flyers Creek Wind Farm is very similar to that for the Capital Wind Farm proposal. Both proposals purport to indicate there will be no acoustic issues. Further measurements and testing are required at Capital Wind Farm to provide additional data to the preliminary testing. However the preliminary testing undertaken to obtain measurement data assessment suggests that the assessment and its predictions are incorrect. It suggests there is valid foundation for complaints in relation to the noise impact of that wind farm.

There is no doubt that the acoustic environment inside residential dwellings in rural areas is different to that outside. The use of an acoustic criterion expressed in terms of the A-weighted level is inadequate for assessment purposes when assessed external to the dwelling and totally inadequate for assessing the noise level obtained inside a dwelling.

The assumptions made as to outside inside attenuation for a typical suburban dwelling do not apply for rural dwellings subject to the impact of noise/energy generated by wind farms.

It is impossible to predict from available data what buffer zones would be required to give protection from noise impacts to the residents affected by the FCWF.

5.4 L. HUSON & ASSOCIATES PTY LTD REVIEW – NOISE IMPACT ASSESSMENT PREPARED FOR FLYERS CREEK WIND FARM

W. Les Huson of L . Huson & Associates Pty Ltd, was commissioned by FCWTAG to provide and analysis of the acoustic measurements and modelling performed by Vipac and presented in the FCWF Environmental Assessment. L. Huson & Associates' report is designated **Appendix 3**.

5.4.1 EXECUTIVE SUMMARY OF THE REPORT (See Appendix 3)

L Huson & Associates Pty Ltd has completed a preliminary review of the acoustic aspects of the Flyers Creek wind farm development proposal submitted by AURECON on behalf of Flyers Creek Wind Farm Pty Ltd in May 2011.

The review focuses on the sound emissions of the proposed wind turbines, the modelling used to predict sound levels in the community and the methods used to determine target noise compliance curves.

The documents detail **background survey data that we believe is inaccurate and non-compliant with the requirements of the South Australian Wind Farm Noise**

Guidelines and the directions of the NSW DECC. There is insufficient detail to show what data was deemed to be removed from the analyses and no detail on the effects caused by the reported equipment failures.

The noise modelling described is at best unintentionally confusing. **Incorrect parameters were input to the CONCAWE noise model and the results of this were used to justify the use of ISO9613 for the results presented to assess compliance.**

Contradictory noise model accuracies are presented and the lower used to feign an approach of conservatism. Despite the vagaries of the noise predictions the results show non-compliance in idealised conditions for the wind farm for a number of dwellings.

The reports suggest that the wind farm should be built and then managed to reduce any non-compliant noise emissions. The management options include facilities available to the example wind turbine used in the study, which it is stated is not the preferred choice for the development. **We believe that this approach is inappropriate and that for the project to be approved there should be a clear conservative margin of compliance in the assessment methodology and results.**

5.4.2 ADDITIONAL COMMENTS BY FCWTAG

1. L. Huson is critical about the choice of representative turbine. On page 6 of his report he states:

   "General Electric has advised that they are working on a solution to a **tone emitted from their 2.5xl wind turbine**. Accordingly, this model will not, after all, be considered for this project and another turbine is likely to be used. **Why did they not choose another representative turbine?** Part of the impact assessment states that compliance can only be achieved at some dwellings if lower noise emission operating modes of the wind turbine, that is a feature of this particular model, are implemented. We question if any of the other alternatives have **similar lower noise emission operating modes."**

2. The basis for the noise impact assessment should be the 2003 version of the SA Wind Farm guidelines **only** and that the DGRs were issued prior to the release of the 2009 SA Wind Farm guidelines. Vipac have used **both** guidelines.

3. Errors in the Background Noise Report (Appendix G1) include:

   - There were 5 background sites but only 2 rainfall detectors and 3 wind speed and direction weather stations. Measurements are therefore **non compliant**.

- Corrections for wind speed at the microphone are **not accurately described** and are **incorrectly performed**.

- Rainfall data from 2 sites have been extrapolated to the 3 sites without rainfall meters. This is **inaccurate** as rain can be localised.

- At least two sites experienced multiple equipment failure leading to significant amounts of data being removed. This has led to doubts about the **quality** of all data collected.

- "Background noise curves at 4 out of 5 background monitoring sites have been applied to other residences using an educated guess procedure." There ***are*** **better, more rigorous approaches**.

- The regression analysis curve for location # 89 is **suspicious**. Sound monitoring down to 20 dB(A) is suspect and **outside the approved measurement range for the instrument used** (operational range is a minimum of 30 dB(A)).

- There is an absence of wind date at location #89 between 16-25 November 2009 (a time of high wind). This makes the sound levels reported at the time **suspect**, yet data has been included in the trend analysis.

- Only one met mast was used to produce **all noise trend curves**. This is likely to have produced less accurate background sound levels. The employment of at least the second available met mast would allow for the calculation of more accurate background sound levels.

4. Errors in the Noise Predictions (Appendix G2 and Chapter 12 Main Report)

    - No comment on the variations from a noise model, **as required** by the SA guidelines, has been provided in the Vipac reports.

    - There are issues of non-compliance and accuracy with the estimation of predicted sound levels.

    - L. Huson states that the assurance by the proponent that any exceedance of noise limits in the SA Wind Farm Guidelines will result in their taking action to ensure compliance. And remarks that this is a "leap of faith". This is surely not the premise on which to base the operation of a 44 wind turbine operation.

- The use of particular noise modelling, and conclusions therefore reached, are **questionable**. **Even using flawed noise modelling there are exceedances of target noise limits** that require special noise reduction operating modes for some turbines.

- In modelling noise no account has been made for the **turbulence effects from upwind turbines** that can increase noise emissions above those used for the modelling.

- The 'Noise sub plan' of the **OEMP is inadequate**. Compliance checking will be difficult and problematic due to the fact that the background surveys presented in the EA "leave one to suspect that the data collected …..makes **any test of compliance problematic** unless the surveys are repeated."

- L. Huson states on page 8 of his report: "An outdoor target noise level from the wind farm from the non-relevant receivers is proposed at 45 dB(A)" and suggests there will be no sleep disturbance at this level in accordance with WHO Community Noise Guidelines. However he draws on WHO considerations of vulnerable groups which experience less abilities and/or possibilities of being able to cope with the impacts of noise exposure (the aged, babies and young children, people in hospital or rehabilitations, those with hearing or visual impediments, people with certain medical conditions etc). These groups have **not** been considered in the FCWF EA.

- L. Huson discusses the levels of sound that can disturb sleep and states that measurable effects start from about 30 dB LAeq. The sensitive groups are mainly elderly persons, shift workers, and persons vulnerable due to physical and mental disorders. It is generally accepted, according to the WHO, that SPL should not exceed approximately 30 dB LAeq if the negative effects on sleep are to be avoided.

- At night it is noted by the WHO that sound outdoors should not exceed 45 dB LAeq and that indoors should not exceed 30 dB LAeq. This assumes an attenuation of 15 dB between outdoors and indoors. This may not be the case and the WHO states that attenuation may only be 5-7 dB. L. Huson has found, under Australian conditions, that the range is at the most equal to 5 dB(A) and more typically is around 3 dB(A) with open windows. To attain a maximum of 30 dB(A) indoors the outside sound limit would have to be no more than 33 dB(A).

- L. Huson concludes: "It is doubtful if the seven 'wind-farmers' or non-relevant receivers that are located within 1 km of the turbines know or understand what sound levels they will be exposed to at night in the summer

months with windows open. **The internal sound levels predicted will not protect sleep** if the attenuation of sound from outdoors to a bedroom is only 3 dB(A) with windows open."

5.5 HEALTH AND AUDIBLE SOUND

5.5.1 The Environmental Assessment makes little comment on noise impacts on health other than to deny any impact at all. In Chapter 16 the EA states that the wind farm "can be designed and operated such that it will comply with the very strict noise amenity criteria utilised in NSW". Since those criteria are the SA EPA Noise Guidelines which are currently central to the "Quinn case" in South Australia and have been referred back to the ERD Court, this is not a commendation.

5.5.2 The EA quotes several sources as stating there are no adverse physiological effects from the noise emanating from wind turbines. But research and legal opinion has moved on. For instance, the EA makes reference to the National Health and Medical Research Council (NHMRC) which published a *"Wind Turbines and Health: A Rapid Review of the Evidence"* in July 2010 stating in part that there was no direct pathological effects from wind farms[36]. This has been convincingly rebutted by – see for instance, Dr. Carl Phillips in his submission (No.897) to the Australian Senate Enquiry into Rural Wind Farms.[5] Nevertheless the NHMRC also clearly says:

1. a precautionary approach should be taken
2. research outcomes should continue to be monitored;
3. wind turbine design standards should be complied with;
4. site evaluation should occur to minimise potential impacts; and
5. people who believe they are experiencing health problems should consult their doctor promptly.

By omitting the recommendations contained in this Public Statement and only noting that 'NHMRC has confirmed that there is no published scientific evidence to support adverse health effects of wind turbines on health' completely **distorts the Public Statement and by its omission is dishonest**.

5.5.3 Professor Warwick Anderson (CEO of the NHMRC) stated in his oral evidence to the Senate Enquiry: **"we do not consider there are no ill effects" from wind turbines[5]. He also noted that "an absence of evidence does not mean there is no problem".** The NHMRC advocates the application of the precautionary principle and recommends that more research should be performed.

5.5.4 This corroborated the Senate Enquiry's seven recommendations which include that adequately resourced epidemiological and laboratory studies should be initiated[5].

5.5.5 The "Quinn case" in South Australia has questioned the ability of the SA EPA noise guidelines to adequately protect the health of residents living near wind farms, and this has been dealt with in detail in this submission.

5.5.6 A recent Canadian Court judgement (18th July 2011) has found on the basis of expert evidence presented to the court that there are adverse health effects from large industrial wind turbines:

> *"This case has successfully shown that the debate should not be simplified to one about whether wind turbines can cause harm to humans. The evidence presented to the Tribunal demonstrates that they can, if facilities are placed too close to residents. The debate has now evolved to one of degree." [19]*

5.5.7 It is an indictment of the wind energy industry that it continues with health impacts denial when there is a rapidly growing body of more recent, independent material published by respected academic researchers and medical practitioners which strongly indicating the opposite view. These health impacts are more pronounced as wind turbines become taller and more powerful with large rotor diameters and hence sound propagation.

5.5.8 Significant research has been performed on the adverse health effects of wind turbine noise.[47,42,38,24,68,69,39,45,23,31,21] The issue of the extremely adverse wind turbine noise impact on children's mental and physical health is dealt with in some detail[10].

5.5.9 The impacts from wind turbine noise are well documented in the above cited references. Noise is sometimes described as "annoyance" but physiological effects are concerning and include: headaches, tinnitus, ear pressure, dizziness, vertigo, nausea, visual blurring, tachycardia (rapid heart rate), hypertension, cardiovascular disease (including Tako Tsubo episodes with 3-6% mortality), irritability, confusion, reduced concentration and memory problems, panic episodes with severe depression and worsening control of pre-existing and previously stable medical conditions such as angina, diabetes.

5.5.10 Cappuccio et al (2011) summed up the health impacts from excessive noise[15]. One of the most significance consequences is that of sleep deprivation with physiological and psychological sequelae, including depression. Lack of sleep results in "detectable changes in metabolic, endocrine and immune pathways. Too little sleep …[is] associated with adverse health outcomes, including total mortality, type 2 diabetes, hypertension and respiratory disorders, obesity in both children and adults, and poor self-rated health. Both short and long duration sleep are predictors, or markers, of cardiovascular outcomes."

5.6 HEALTH AND INFRASOUND

5.6.1 Infrasound is also termed Non-Audible Sound and refers to that sound that cannot be heard, but can be felt, and is usually considered to be less than 20 Hertz frequency.

5.6.2 There are two critical issues to consider:

1. Do industrial wind turbines produce infrasound?
2. If they do, does infrasound from wind turbines have a health impact?

5.6.3 Do Industrial Wind Turbines produce infrasound?

Despite wind energy company denial there is now a considerable, and growing, body of work that has found that **wind turbines do produce infrasound**. Low frequency sound is likely produced by wind turbines with the displacement of air by the blades and the turbulence around the blade surface; and as the turbines grow larger the potential to produce infrasound increases.[54,55,26,27,76,69,7] In fact results confirm the hypothesis that the spectrum of wind turbine noise **moves down in frequency with increasing turbine size**[34]. Compared to medium and high frequencies, **low frequency levels decay slowly with distance**, are **less attenuated by conventionally designed structures (such as homes), cause certain building material to vibrate** and can sometimes **resonate with rooms**, thereby undergoing **amplification.**[60] Thus infrasound is more likely to be an **indoor problem rather than an outdoor**. Recent work in Europe has found that infrasound can be measured out to **8-11 kilometres.**[51,16] **This has significant implications for the determination of a *set back* distance of residences from wind turbines**.

5.6.4 Does Infrasound from Wind Turbines have a Health Impact?

Infrasound, like audible sound, will affect people in different ways, both as to susceptibility (about 15% of the population exhibit increased noise sensitivity) and symptoms (type and degree). The difference between audible sound and infrasound is that infrasound is felt rather than heard. It manifests as those health impacts associated with audible sound but additionally health effects can include sensations of fullness, pressure, vibration or tinnitus, tiredness and malaise.

Lower frequencies correspond to resonating frequencies of our body organs and in their presence encourage them to vibrate. Shepherd[60] notes that the head resonates at 20-30 Hertz and the abdomen at 4-8 Hertz. The following table illustrates the effects of chronic low frequency vibration and subsequent physiological consequences[60].

Table 5.1: Psychological and physiological sequelae resulting from low frequency vibration

Frequency of vibration	Symptoms
4 – 9 Hz	Feeling of discomfort
5 – 7 Hz	Chest pains
10 – 18 Hz	Urge to urinate
13 – 20 Hz	Head aches

There has been considerable research published in recent years confirming the health impacts of infrasound from wind turbines.[60,10,68,69,70,4,34]

5.6.5 Infrasound and the FCWF Environmental Assessment

The EA in Chapter 16 quotes the World Health Organization (unreferenced) that "there is no reliable evidence that sounds below the hearing threshold produce physiological or psychological effects."

Further the Vipac Report (Appendix G2) states: "The psycho-acoustic response or annoyance levels to a new noise source is subjective and will vary from person to person but is unlikely to be significant with wind farm noise and particularly so with increasing separation distance between the turbines and the residences. Current wind turbine designs are not a significant source of low frequency noise or infrasound – even nearby (less than 500m), any infrasound is well below the threshold of human perception and would not cause health effects." **There is no reference(s) quoted to confirm this statement**.

In contradiction to this the WHO has stated[8]:

"….a large proportion of low-frequency components in noise may increase the adverse effects on health…. It should be noted that the low frequency noise, for example, from ventilation systems, can disturb rest and sleep even at low sound pressure level…Special attention should be given to: noise sources in an environment with low background sound levels; combinations of noise and vibrations; and to noise sources with low-frequency components."

And further:
"The evidence on low frequency noise is sufficiently strong to warrant immediate concern…Health effects due to low frequency components in noise is estimated to be more severe than for community noises in general".

5.7 WIND TURBINES AND THE AUSTRALIAN HEALTH EXPERIENCE

5.7.1 Since the construction of wind turbines, and more latterly as the number of wind farms increase and the size of the wind turbines themselves grow larger, there have been an increasing number of complaints about the impact of the wind turbines on mental and physical health in Australia. The symptoms are consistently those that are described as Wind Turbine Syndrome and have been discussed above[47]. There are many reports of similar health experiences described in Europe, Canada, New Zealand and the United States[52,53,55,4,10,21,24,26,30,31].

5.7.2 The volume of reports cannot be ignored or dismissed as the rankings of jealous non host families. There are now reports of host families being affected and leaving their homes as a consequence (personal communication). Health effects are real and their cause can be found in both non compliant audible sound, and from infrasound which is consistently denied by the wind industry. As one example, the report published here from The Acoustics Group illustrates the lie of this claim by the wind industry. Infrasound and non-compliant audible sound have made the lives of a significant number of residents close to wind turbines intolerable and has put them at considerable health risk (mental and physiological).

5.7.3 The FCWTAG has made efforts to undertake a preliminary survey of affected people and has received histories from a number of people from geographical disparate areas of Australia. The overwhelming impression is that there are a growing number of people who are completely desperate, who feel they are not being taken seriously by the wind energy industry, the medical profession, Public Health officials, or appropriate Government departments (Federal, State or local).

5.7.4 Appendix 7 is a compendium of some emails and letters which we have received recently. A sample only is published here and some, who wish to remain anonymous because of intimate medical details, have had their names removed. We have also had responses from overseas as well. This is not only an Australian issue, but one that has ramifications throughout the world. These are indeed cries for help and bear attention from those who seek to make determinations about the siting of wind turbine installations and have any regard for the well-being of their fellow man as well as their duty of care.

5.7.5 In addition to the histories presented in Appendix 7 it is noteworthy to assess other venues where medical complaints and histories are presented. These include:

A significant number of submissions (greater than 30) to the Federal Senate Enquiry into *The Social and Economic Impacts of Rural Wind Farms* (2011);

http://www.aph.gov.au/senate/committee/clac_ctte/impact_rural_wind_farms/report/index.htm

Eleven signed affidavits of health impacts at the AGL Hallett 2 wind farm in South Australia – submitted by the Coopers Gap Landscape Guardians as an inclusion in their reply to the AGL Initial Assessment Report, Qld, 2011;

Evidence given at the Quinn –v- AGL Hallett 2 legal proceedings in both the ERD and Supreme Courts of SA;

Any one following this issue will find a plethora of material detailing the health impacts and consequences (social, financial, medical and cultural) of wind turbine installation in the media (TV, radio, newsprint, websites and blogs etc.) Websites include:
www.wind-watch.org
www.waubrafoundation.com.au
www.windvigilance.com
www.windperformance.info
www.atkinsonrapley.co.nz
www.windturbinesyndrome.com

5.8 EXPLANATORY NOTES

5.8.1 Industrial Wind Turbines, Sound Measurement and Human Sound Perception

1. **Industrial Wind Turbines** (IWTs) are significant structures of human engineering. Current models consist of a tower at the top of which are three rotor blades attached by a hub to gears and a generator. These sit in a box (nacelle) at the top of the tower. The tower is anchored to a steel reinforced concrete foundation. A motor turns the nacelle to face into the wind. The blades spin upwind of the tower and blade angles are adjustable. When the rotor spins, it turns a shaft. The shaft spins magnets inside copper coils. This induces a current in the coils. The frequency and voltage of the electricity so generated is modified by circuitry and the current is sent off to the relevant Grid.

2. There has been a significant increase in the height and size of turbines since original construction. Initial tower heights were about 15 metres in the 1980's with a power output of about 50 kw. By 1990, towers were up to 40 metres, doubling to 80 metres by 2000. Power output had increased to 2000 kw. The turbines presently proposed in most developments in NSW are approximately 162 metres in overall height with tower heights of up to 100 metres and blade lengths

of over 60 metres. Prototype turbines are now 193 metres in height. As the wind industry has developed with government renewable energy targets and subsidies, the variety of terrains into which the turbines have been located has extended.

3. The **human body** however, is a vastly more complex piece of engineering than an IWT. The capacity of the human organism to function depends on its capacity to react to its external and internal environment. We possess refined sensory receptors – our skin, our ears, our eyes, our motion and balance senses amongst others – which allow us to do this. These receptors transmit detailed information via our neural pathways to our brains which in turn process this information and co-ordinate our bodies' responses to it. As would be expected for survival, many of these responses occur automatically, without conscious control. Each night, we sleep and the cognitive processes of the brain are consolidated. It is not surprising, indeed it is completely predictable, that if our sensory input or our sleep is disturbed in a prolonged manner, we may, and will, become sick. Our capacity to hear persists even during sleep as opposed to other sensory modalities. This forms the basis for the effectiveness of smoke alarms to wake us compared to other sensory input.

5.8.2 Sound, Sound Measurement and Sensory Perception of Sound

1. Operating IWTs emit sound energy which is transmitted as waves. The science of sound and its associated physics is far from simple but an understanding of the physical principles of sound and its effect on human health arising from IWT projects is central to this document.

2. The spectrum of sound waves is continuous but is commonly divided into the classifications of **infrasound**, **low frequency sound**, **mid-frequency sound** and **high frequency sound**. Although variable classifications exist the one used here is after Dr Robert Thorne and consists of:

Infrasound	20 Hz and below
Low Frequencies	20 Hz to 250 Hz
Mid frequencies	250 Hz to 2000 Hz
High frequencies	2000 Hz to 20,000 Hz[71]

3. The Hertz measurement refers to the cycles per second at which the wave is travelling. Lower frequencies have **longer** wave lengths than higher frequencies. The **force** of the wave (referred to as pressure) is measured in **decibels (dB).**

4. There are a number of scales available to measure sound energy. Some of these scales weight (i.e. give preference to) particular frequencies in their measurements. The sounds of all frequencies are not heard equally well by humans. The **A scale** was developed to deal with **human hearing**. Most studies of community noise have accordingly used the A weighted scale. This scale weights the contributions of sound waves in the 1,000 Hz to 6,000 Hz range. It progressively reduces contributions from about 500 Hz down and 7,500 Hz up[68,62]. Pierpont states that the effect of the weighting is to reduce sound measured by about 30 dB at 100 Hz, and about 40 dB at 31 Hz. So the A weighted scale does not give, or purport to give, a pure measure of frequencies outside the range of hearing of the human ear and *increasingly* distorts the contribution of lower frequencies as it moves down the spectrum[67].

5. The **C scale** captures sound equally (i.e. without weighting) over most of the audible range down to 31 Hz. After this, it has a decreasing response. The **Z scale** is an unweighted scale (sometimes called **"Lin"** or **"Flat"**) which gives an equal response to sounds between 10 Hz and 20,000 Hz in acoustical standards. The **G weighted scale** measures infrasound frequencies. Some researchers prefer the G scale for infrasound measurement although Dr Thorne uses the **Z scale** in conjunction with the C weighted scale.

6. The relationship between our perception of sound and the measurement of sound is an interesting one. If we can hear sound, we do not necessarily hear in accordance with what is measured. Firstly, it is usual for sound measurements to be *averaged* over time. If the time period over which sound is measured is short, unique noise events will be captured. But over a longer period, unique events are averaged away[49]. As it is often said, the human organism does not perceive averages.

7. Secondly, sound is perceived against a background of other sounds. The relevance of background noise in determining the perception of noise is well recognized[43]. Sound may, in some circumstances, be masked by other sounds and we do not perceive it notwithstanding its presence. Conversely, it is widely accepted that sound is likely to be perceived more loudly if it is heard against a quieter background. A difference of **10 dB** is perceived by human hearing as **twice** as loud.

8. Sounds are not constant. Just as we may perceive a contrasting sound as louder than measured, we perceive increases in sound from a single sound source as greater than the actual change in decibels[70]. Again a 10 dB increase from a single sound source is likely to be perceived as twice as loud as the original sound.

9. Leaving aside audibility, sound waves in the **low frequency** and **infrasound frequency** ranges share characteristics which differ from sound in the **mid to higher frequencies** and which are pertinent to the IWT/adverse health debate. In particular, infrasound and low frequency sound waves **attenuate** at slower rates. They **travel further** and **fall away less quickly**. At distance, when sound emanates from a broadband source, the lower frequency components will **dominate**. Lower frequencies are less easily masked by noise in the mid to high frequency ranges[75,76]. Low frequency waves, with their longer wavelengths, are **not effectively filtered by buildings[75,76].** Nor is hearing protection effective[67].

10. In relation to the human perception of lower frequencies, low frequency sound may be audible. Older people's hearing is proportionally more acute at low frequency ranges than mid to higher frequencies[67]. Infrasound is generally regarded as **inaudible** but research has established that there is in fact a **threshold for audibility**. The World Health Organization states that noise with low frequency components requires **lower guideline values** in view of health effects being **more severe** than for community noises in general[63].

11. Audible or not, the ear is **not insensitive to infrasound**. Recent American studies have confirmed that the ear of higher mammals responds to infrasound waves below audible levels[52,53,54,55,56]. The research suggests that this may occur in a number of ways – by stimulation of the Outer Hair Cells of the Cochlea (the Inner Hair Cells respond to sound which we hear), by affecting the ear's response to higher frequency sounds, by stimulation of the vestibular hair cells or by influencing the volume of the fluid in the inner ear (the endolymph). This research highlights that the ear is both the organ of **hearing** and the organ of **balance**. Any effect on the vestibular system will impact on the body's balance and equilibrium.

12. Note also, that sound waves are **energy waves**. In addition to allowing humans to hear when they impact on the ear, they may cause vibrations in other organs as well as in external structures. Just as low frequency noise can cause vibrations of walls or windows, the bones, organs and tissues of the body are capable of vibration and resonance also.

5.8.3 Industrial Wind Turbines Operating Characteristics

1. What happens to sound waves and vibrations when IWTs are anchored into place in varying numbers in different locations and are "turned on". The immediate answer is "we don't know" with any real specificity or accuracy. The adequacy of wind industry modelling and pre-construction predictions has been criticized in peer reviewed literature. Wind farm compliance measures are carried out by the

wind industry to the **minimum extent necessary to comply** with development conditions. This means the extent of comprehensive and detailed independent studies is usually limited.

2. When turbine blades rotate, they produce soundwaves through the broadband spectrum ranging from infrasound, through the lower frequencies and the mid and high frequencies. As the blades rotate through the air, the pressure (amplitude) of the waves so created fluctuates or changes. This is referred to as **amplitude modulation**. With audible waves we hear the modulation often described as louder/softer, louder/softer or swish/swish/swish. Some evidence indicates that this variation is heard when the blades pass from the horizontal position going down. When the blade comes up, it is passing through varying degrees of air turbulence and the change in frequency is audible as a thump or a beat[52,53,54,55,56]. The fluctuations in the sound waves are occurring across all frequencies but it is common for people living near wind farms to describe an audible "swish/thump", "swish/ thump" with variations in the "thump."

3. In relation to frequencies that are audible, **amplitude modulated** noise is more **easily perceived and more annoying** than a constant level of noise[70]. Swedish researchers have shown that audible noise from IWTs is more annoying than other kinds of industrial/transportation noise levels for this very reason[8]. Residents have been shown to be highly annoyed by wind turbine noise at 38 dBA while aircraft noise has to reach 57 dBA, and road traffic noise, 70 dBA. Audible wind turbine sound waves vary in amplitude within relatively short spaces of time, and without cessation, even at night. They are likely to be far more intrusive to the central nervous system than a pure amplitude measurement would suggest.

4. When multiple turbines are placed together and are operating, what is occurring to the energy waves? Dr Robert Thorne suggests that with two or more turbines in phase together and a light breeze, there can be a variation (i.e. an increase) of 6 – 7 dBA arising from the synchronicity of the blades. Recalling that a 10 dBA change in a sound source is likely to be perceived as twice as loud. Alternatively, if the blades are not operating in synchronicity or there is turbulence with different wind velocities and directions (presumably a common occurrence with ridgeline wind turbines), the "thump" produced by the upward blade movement is exacerbated. The blades cannot be continuously and sufficiently adjusted to cope with the turbulence.

5. Further, Dr Thorne and others have shown that downwind from a cluster of turbines, vortices interact and sound is enhanced. Thorne describes these areas where sound is amplified as **Heightened Noise Zones (HNZ)**. There can be

significant variations in residences reasonably close to each other if one falls within a Heightened Noise Zone, receiving higher amplitude of waves temporarily, and the other does not. As wind directions change, so do the Heightened Noise Zones. The same residence may be in a HNZ at some times and not at others.

6. The audible amplitude can also be markedly affected by terrain. The most productive land based wind sources can be along ridge lines with houses nestled in adjacent valleys. It is along ridgelines that **noise enhancement** also occurs. Partly, this can be as simple as the fact that a house is built in an area protected from the usual wind in the area. The masking effect which the wind might otherwise have on the audible turbine noise is absent. Remember that noise perceived depends partially on background and masking noise. More importantly, wind turbine noise is enhanced by the atmospheric conditions which frequently occur in ridges and valleys[64]. Warm air rises. At night, the air stabilizes. With a light wind blowing at turbine height, sound levels at homes 800 to 3.2 kilometres away in the valley have been measured at 5 – 15 dBA higher than the models would otherwise suggest[26]. These conditions are likely to occur at night when families are asleep and can be prolonged with foggy, still weather.

7. All of these factors suggest that audible noise produced by IWTs can and will be **far greater** than manufacturer's specifications suggest and **compliance monitoring detects**. This fact is well known. Dr M Swinbanks, an applied mathematician with extensive experience in the theory and practice of aerodynamic sound generation, states that this was well known to NASA by 1990[26]. NASA and their subcontractors calculated sound levels generated by ideal turbine blades operating in clean airflow and identified how, inevitably, turbulence resulted in unsteady blade loadings, thus increasing sound levels. They then extended the work to consider the effect of wind gradient (i.e. wind velocity varying with height across the face of a turbine). This generated substantially higher noise levels. Finally, they subjected people to impulsive wind turbine noise under laboratory conditions and showed that the hearing threshold could be almost 20 dB lower than the conventionally accepted noise threshold. Swinbanks has stated:

> "During this period [i.e.1980-1990], NASA and NASA sub-contractors identified almost all of the specific issues relating to wind-turbine noise, that now are being re-learned the hard way, by bitter experience" [67]

8. It seems probable that the wind industry itself is aware of this issue. In his presentation in May 2010, Erik Sloth stated "Current modelling techniques were

developed when turbine projects consisted of one or two turbines." 17 He went on to comment that in relation to new projects requiring detailed noise study including **wind speed**, **wind direction** and **directional transmission paths**, "No modelling tools are at present available to do this kind of modelling, but tools are probably on the way."[79]

9. The Finnish acoustics engineer, Denis Siponen has suggested that as turbines get larger, so will the complexities of amplitude modulation[62]. Because the blade length of modern wind turbines can be more than 60 metres, the difference in wind speed at different blade positions can be several metres per second. Growing the size of the turbines and the diameter of the blades is likely to yield increasing problems with **amplitude modulation**: "As wind turbines are still getting larger and their rated power higher, the number of complaints of wind turbine noise is also quite likely to be increased." [62]

10. Concerning infrasound and low frequency sound, the picture is even more interesting. Because infrasound and low frequency sound waves attenuate at slower rates than higher frequencies, it is predictable that they will predominate in the sound waves produced by IWTs at distance – for example at 2-3 kilometres c.f. 500 metres. It is predictable that residences located at distances from operating IWTs are being exposed to low frequency sound and infrasound. We know that these waves can travel through buildings and cause walls, windows and people to vibrate. Resonations can be set up. What then are the levels of infrasound and low frequency waves actually generated by operational IWTs? **We do not know**. The wind industry measures on the A weighted scale only. This is consistent with current development requirements which are now totally inadequate.

11. Available recent studies strongly indicate that low frequency and infrasound generated by IWTs are greater than previously acknowledged and likely to be greater still with increases in the height and size of turbines. Robert Thorne[70,71] uses the C weighted scale in conjunction with the Z scale.; Pedersen and colleagues[42,43] use the G scale. These studies show that the lower frequency sound waves generated by IWTs indeed predominate at distance. They are modulated and are present at very significant levels. By way of example, measurements taken inside a residence at Waubra, Victoria by Dr Thorne reveal that there are infrasound waves occurring in Australian residences near wind farms in the 50 to 70 dB(Z) range. There are also high levels of amplitude modulated low frequency waves which may be audible to some individuals.

12. In his presentation to the 4th International Meeting on Wind Turbine Noise at Rome in April this year, Dr Swinbanks presented evidence indicating that

conventional techniques of assessing low frequency and infrasound waves have underestimated their impact and that typical wind turbine infrasonic and low frequency noise can be "readily audible at very much lower levels that has hitherto been acknowledged."[67] He again points out that these results are consistent with the extensive work carried out by NASA in the decade between 1980 and 1990. NASA identified and reported increases in low frequency impulsive sound patterns from modern upwind rotor configuration turbines in 1989. NASA attributed the increase to wind-gradients and shadowing effects. At the same meeting, Denis Siponen noted that the increase in the low frequency noise component with large turbines is higher than the increase in the A weighted sound levels[62]. Larger wind turbines emit higher noise levels at low frequencies and this would seem where the future of industrial wind turbines lies.

6 VISUAL IMPACTS

Director-General's Requirements - the EA must:

1. provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation;

2. assess the impact of shadow "flicker", blade "glint" and night lighting from the wind farm;

3. identify the zone of visual influence (no less than 10 kilometres) and assess the visual impact of all project components on this landscape, including in the context of the visual influence of the existing Blayney Wind Farm;

4. include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures;

5. provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.

6.1 SUMMARY OF OBJECTIONS

Visual Impact: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

6.1.1 The wind turbines will dominate, scar and industrialise the landscape.

6.1.2 The wind turbines will degrade the scenic qualities of the rural landscape in which residents have chosen to live, completely altering the visual environment and alienating residents whose rights to the quiet enjoyment of their property have been usurped.

6.1.3 There will be cumulative visual effects both locally and within the shire where Blayney Wind Farm, Cadia Valley Operations (Newcrest Mining), and other projected wind farms and mines will effectively create a massive industrial rural landscape.

6.1.4 The report on flicker produced by Parsons Brinckerhoff Australia inadequately predicts the effects of flicker on affected residences and does not address the possible effects on people/children with epilepsy or autism.

6.1.5 The substation is poorly located and visually impacts at least one residence.

6.2 BACKGROUND INFORMATION

6.2.1 The proposed Flyers Creek Wind Farm is situated at the north western end of Blayney Shire. The Blayney Shire Council website describes Blayney and the surrounding district as "located in the Central Tablelands of New South Wales, some three and half hours by road from the centre of Sydney. It is the centre of a **closely settled and populous district**, which stretches east to Bathurst, southwest to Cowra and north to Orange. Blayney is a comfortable 25 minutes drive to Bathurst - population 33,000 and to Orange - population 34,000."

6.2.2 The website also quotes demographic studies stating that the population increasing especially in the northern part of the shire. **These very facts provide a strong argument for the inappropriateness of the 44 wind turbine industrial complex within the boundaries of a well populated area.**

6.2.3 **The FCWF Environmental Assessment fails to take into account these demographic figures and to address the increasing population growth predicted for the Blayney Shire**.

6.2.4 Maps and charts submitted with this EA are inaccurate, contain missing data and have important data obliterated or impossible to read.

6.3 LANDSCAPE CHARACTERISATION

6.3.1 Blayney Shire lies in the Central Tablelands of New South Wales. This tablelands region, 200-350 kilometres west of Sydney and a similar distance north of Canberra in the Australian Capital Territory, is important because of its proximity to major population centres and because of its agricultural production. It comprises several plateaux with some areas higher than 1200 metres, the highest being Mt. Canobolas at 1,398 metres (northwest of the FCWF project) and Mt. Macquarie at 1,203 metres (to the east).

6.3.2 The Central Tablelands is considered to have one of the most equitable of Australian climates and this, together with the picturesque undulating to quite mountainous landscape, makes it an attractive destination to both residents and travellers. The

main river in the Blayney district is the Belubula River, a tributary of the Lachlan River. Because of the extremely hilly countryside with deep valleys there are also several significant creeks which within the FCWF area include: Flyers Creek, Cowriga Creek, Slatterys Creek, Gooleys Creek, Kangaroo Flat Creek, Cheesemans Creek, Taylors Creek and many ephemeral gully watercourses.

6.3.3 The Central Tablelands is renowned as a beautiful, charismatic, tranquil and desirable area and the Flyers Creek district exemplifies this. It's proximity in particular to Orange now makes it easily accessible. This is hardly the landscape for rural industrialisation. The number of local residents affected adversely by the imposition of industrial wind turbines within their "home space" far outnumbers the host families who seek to benefit to the non hosts' detriment.

6.4 BLADE FLICKER

6.4.1 The reporting company, Parsons Brinckerhoff Australia Pty Ltd (PB Australia) is an Australian company (Melbourne office) which Infigen (through Aurecon) employed as an independent company and which is solely working from Infigen information and maps.

6.4.2 PB Australia has not accessed the area and takes no responsibility for any third party who may use or rely on its document for information. This immediately brings into question its reliability.

6.4.3 As with the Noise report, PB Australia are using an "indicative" turbine for its measurements as the final size of the turbine to be used at Flyers Creek is **still to be disclosed**. Consequently any change in the blade length, thickness and speed of rotation will significantly alter these outcomes.

6.4.4 **Measurements in this report only pertain to the shadow travelling over a window or skylight on a sample building of 10m wide x 2m high and 1.5m off the ground. No consideration is taken for flicker over outside living areas, gardens, work sheds etc. Nor does this rectangle realistically represent many of the residences in the development area.**

6.4.5 Sunlight and cloud formation for this report has been obtained from the Bureau of Meteorology for Richmond Airport and Canberra Airport. Both of these are in excess of 200 km away. However, as they have deemed Canberra to be "geographically similar" with our area, they have based their measurement for this report on Canberra data.

6.4.6 The map provided by PB Australia is particularly hard to read because of white boxes and black lettering which obliterate much of the information underneath. A map has been requested from PB Australia, without boxes and lettering. PB Australia was only willing to provide the map with Infigen's permission, which has only recently been forthcoming (Figure 6.1) . This goes towards **poor community consultation and transparency or worse**.

6.4.7 Infigen (via Aurecon) supplied the maps to PB Australia. As the turbine numbers appear to be **incorrect** there is a concern that other information regarding the number and placement of houses may also contain errors.

6.4.8 Flyers Creek Wind Turbine Awareness Group has ground-truthed the number and location of residences and has found **additional residences** not notated on the maps.

6.4.9 PB Australia found 25 residences that would be affected by flicker. The "cut-off" points seem to be 30 shadow flicker hours per year for the "worst case" scenario and 10 shadow flicker hours per year for the "realistic" scenario. The statement is made: "No residence experienced more than 10 hours of shadow flicker in the realistic case including residence involved in the wind farm project. For the worst case, no neighbouring residences will experience over 30 hours of shadow flicker per year."

6.4.10 In Table 1 of PB Australia's report 3 residences out of the 25 experience worst case shadow flicker hours per year of greater than 30. Four residences experience realistic shadow flicker hours per year at the top end of the scale, with 4 being greater than 8 (two of these being greater than 9). From the flicker map reproduced here (Figure 6.1), it is apparent that a wide area of the proposed wind farm is going to be impacted by shadow flicker, and by extension blade glint.

6.4.11 In relation to the effect of flicker on epilepsy and autism, this is covered in the section on Health. Suffice to say, autistic children are extremely sensitive to the noise and flicker of wind turbines. There are two autistic children known in our community who are likely to be severely impacted.

6.4.12 The proportion of patients affected by viewing wind turbines expressed as distance in multiples of the hub height of the turbine has been shown that seizure risk does not decrease significantly until the distance exceeds 100 times the hub height. Hub height of the representative wind turbine is 100 metres. **This would make the distance 10.0 kilometres for susceptible individuals which is at considerable variance to PB Australia's assertion of 1 km**. Moreover, there would be a cumulative effect from blade flicker at these distances[20].

6.4.13 Since risk does not diminish with viewing distance, flash frequency is therefore the critical factor and should be kept to a maximum of three per second, i.e. sixty revolutions per minute for a three-bladed turbine. On wind farms the shadows cast by one turbine on another should not be viewable by the public if the cumulative flash rate exceeds three per second.

6.5 VISUAL INFLUENCE

6.5.1 Visual impact of a wind turbine development is a major consideration. While distance and scale of the landscape can produce different perceptions of the impact on the landscape the human eye is often drawn to 'artificial' vertical features, regardless of distance, making them seem bigger. This is something that cannot be reproduced in a photomontage especially when a wide angle lens is used where the superimposed wind turbines will seem more distant, particularly in the centre of the picture. The photomontages give a sense of turbines that have been "faded out" and therefore we feel are not a true representation of the final visual impact.

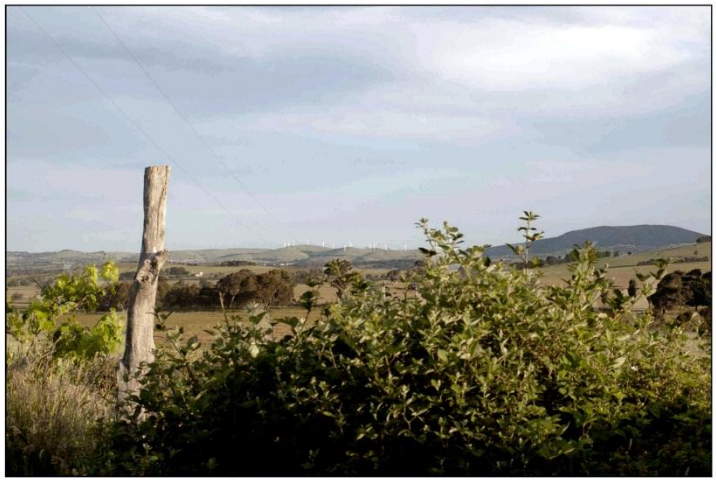


Image 1 : Shot taken from Willowdale toward the existing turbines at Carcoar.
These turbines are 67 meters high and
12 - 15 kilometers away and are clearly visible.
(This shot is slightly to the left of the EA shot below)

Image 2: View of same area in infigen's EA. These turbines are 150 meters high and the closest of them are 1.3 to 1.8 kilometers away yet we can hardly see them.



Figure 6.1: Comparison of Blayney Wind Farm turbines and a photomontage of wind turbines proposed for Flyers Creek Wind Farm

6.5.2 The EA states: "Development of the wind farm will introduce large wind turbine structures to the generally rural landscape that will be a new noticeable element in the existing scenes. However, operation of the Blayney Wind Farm in the district for ten years will reduce the sense of novelty and change of the Flyers Creek project, even though the Flyers Creek project is considerably larger." Further the EA describes Blayney Wind Farm as being well accepted by the community. This is anecdotal evidence only and has never been tested. There is also significant anecdotal evidence to support the contention that residents are distressed at the prospect of 44 turbines of 150 metres compared to 15 turbines of 67 metres.

6.5.3 In addition, there is the cumulative effect of a 293% increase in the number of turbines within a small area. Blayney Wind Farm is only 8 kilometres from the proposed Flyers Creek Wind Farm.

6.5.4 The wind turbines are 150 metres high. They will be sited along ridgelines. Viewing the turbines from a valley floor, for instance, as will be the case from a significant number of residences, will increase the height impact. For instance Errowanbang School is sited in a valley where 33 turbines will be visible to a greater or lesser extent, the impact of which will only be ameliorated by vegetation screening.

6.5.5 Issue is taken about the creation of "visibility indices" which rely heavily on the presence, or proposed planting of, vegetation screening. Vegetation, if new planted, takes a significant number of years to grow to a height where it may influence turbine visibility; vegetation already in existence is subject to the vagaries of nature (drought, tree fall – a significant factor, and other influences) that can result in the removal or modification of vegetative screening. In other words, the inclusion of vegetative screening into the modelling for visibility is an anathema and does not translate to ground truthing over time.

6.5.6 In support of this statement the EA (Chapter 9) accepts that: "Due to their size and required position on the top of ridges, the wind turbines will be prominent and **difficult** to screen at the site." Difficult in reality is impossible.

6.5.7 Photographs taken to represent the landscape in Chapter 9 are only partially representative of the area:

- The view **east** of Carcoar towards Mount Macquarie is not pertinent – the development will be to the west. A more appropriate view would be above Carcoar along the Mount Macquarie Road. Mount Macquarie rises to over 1000 metres and residents above Carcoar and towards the mountain will have widespread views of

almost the entire Flyers Creek Wind Farm (depending on altitude). The visual impact will be significant. This photograph is irrelevant and deceptive.

- There are no photographs incorporating Blayney Wind Farm, nor are they indicated in Figure 9.1. In Figure 9.1 the 15 turbines are sited between the 7.5 -10 km bandwidth to the east and south east between Carcoar Dam and Mount Macquarie. The inclusion of wind turbines in Figure 9.1 would amply demonstrate the cumulative impact of the two wind farms (Blayney Wind Farm and the proposed Flyers Creek Wind Farm). This again indicates the highly restrictive nature of the selected photographs.

- There is no view that includes the significant number of residences to the north of the development. An appraisal of the Figure 9.1 clearly indicates the residential density in that area.

- Few photographs are taken from the valley floors.

- The photographs seem to be chosen to exclude residences within the development area, giving the false impression that this rural area is sparsely populated which it is not.

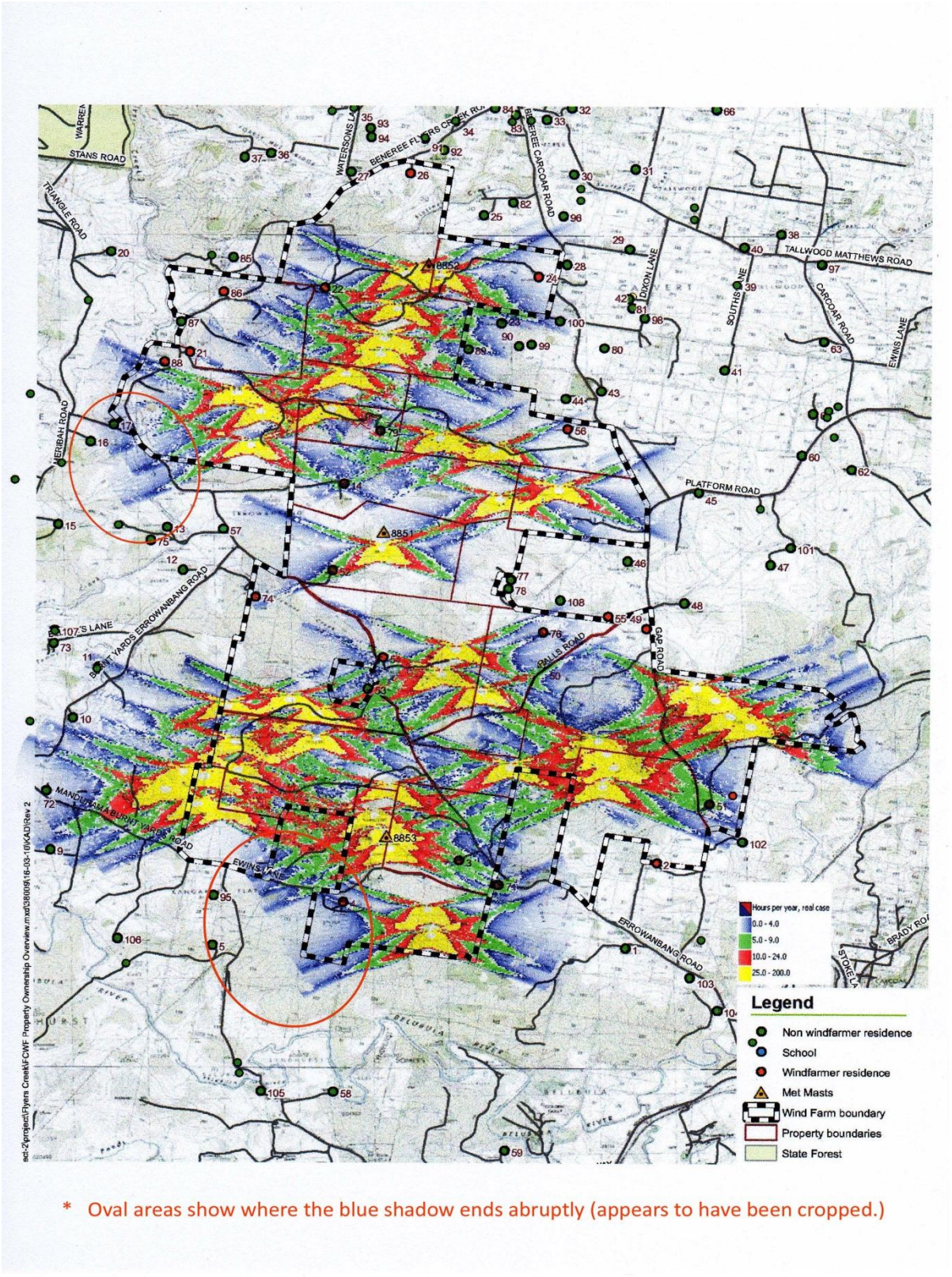
6.6 SUB STATION

6.6.1 There are no photographs which accurately locate the position of the sub station, 120x80 metres in area.

6.6.2 According to the development plan of wind turbine sites the sub station will be **about "500 metres"** from one residence. This has been measured by the closest resident as **300 metres**. This resident also has two turbines sited approximately 1.5 km distant.

6.6.3 The EA states the substation will be "About 120 by 80 metres with a number of small buildings, height of structures mostly less than 10 metres but with busbars and supporting structures up to 25 metres high". The suggestion is that trees should be planted around the substation to screen it. There are already some radiata pines between the residence and the site which are mature and in decline (some dead). It would take many years for new vegetation to grow to a height of 25 metres or more to provide adequate screening.

6.6.4 This resident (#87) is significantly impacted not only visually but from noise and issues relating to the electro-magnetic field.



* Oval areas show where the blue shadow ends abruptly (appears to have been cropped.)

Figure 6.2: Map showing flicker effects on the Flyers Creek Wind Farm, with white labelling removed. As a consequence the flicker patterns are more legible. Query the cropped areas as indicated above.

7. FLORA AND FAUNA

DIRECTOR-GENERAL'S REQUIREMENTS

The Environmental Assessment must:

1. Include an assessment of all project components (including the transmission easement through Canobolas State Forest) on flora and fauna and their habitat consistent with the *Draft Guidelines for Threatened Species assessment* (DEC, 2005), including details on the existing site conditions and quantity and likelihood of disturbance;
2. The EA must specifically consider impacts to threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the site and surrounding land, impacts to riparian and/or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines and transmission lines must be assessed, including demonstration of how the project has been sited to avoid and/or minimise such impacts;
3. Include details of how flora and fauna impacts would be managed during construction and operation including adaptive management and maintenance protocols; and
4. Include measures to avoid, mitigate or offset impacts consistent with "improve or maintain" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project.

7.1 Flyers Creek Wind Turbine Awareness Group objects to the proposal:

7.1.1 No **Soil** and **Water Management Plan** for either the construction or the operational phase of the project is presented as part of the Environmental Assessment. Leaving this plan to be developed as part of the Conditions of Consent has meant that there can be no public comment on this important aspect.

7.1.2 No **Construction Environmental Management Plan** (to include detailed design of site access points, tracks, underground cables etc) has been presented in the Environmental Assessment. The EA states that this will be developed in consultation with an ecologist. Again it appears that this plan will be developed as part of the Conditions of Consent and again there is no opportunity for public comment. It is assumed, but is not clear, that the Soil and Water Management Plan differs from the Construction Environmental Management Plan.

7.1.3 Deficiencies in the flora survey: The EA states that the exact loss of trees **cannot be quantified** at this time as the location of the infrastructure, particularly tracks and cable routes, has not been finalised. Why has the EA been presented for public

comment without this important aspect of the plan described? How can a determination be made on the FCWF proposal without specific details in place?

7.1.4 The Environmental Assessment does not make adequate provision for the preservation of tree hollows which are critical for parrot breeding, specifically important in the Flyers Creek area for the vulnerable **superb parrot** and **turquoise parrot**.

7.1.5 The presence of **raptors** – in particular the protected Wedge-tailed eagle – is noted and a plan for minimisation of collision mortality is proffered. This is inadequate.

7.1.6 Micro bats are very important to the ecology of the area which accommodates two vulnerable species (only one surveyed). Micro bats are susceptible to fatal barotrauma. The Environmental Assessment makes no mention of this and there are no plans suggested to mitigate this.

7.1.7 There does not appear to be any assessment of the effect of the transmission line through the Canobolas State Forest on flora and fauna as required by the DGRs.

7.1.8 There is some consideration of the impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines and transmission lines. But the demonstration of how the project has been sited to avoid and/or minimise such impacts is sketchy, and apparently details will be decided later. FCWTAG do not believe the DGRs are adequately met.

7.2 FLORA

7.2.1 The Survey of Flora and Fauna was carried out by Kevin Mills and Associates (KMA). The survey found the remnants of a **critically endangered ecological community**, viz: the Commonwealth EPBC Act listed White Box (*E.albens*) – Yellow Box (*E. melliodora*) – Blakeley's Red Gum (*E. Blakelyi*) and Derived Grasslands community. This is also listed under the NSW TSC Act. This community is commonly referred to as Box-Gum Woodland. The remnants in this report are dismissed as being of poor quality and, apart from micro siting the turbines in an attempt to avoid removing trees; little provision is planned for the preservation of these remnants. Remnants are important, especially for endangered communities, as they provide future seed banks and genetic repositories.

7.2.2 The survey of tree hollows was carried out on ridge tops only. 41 trees were surveyed (36 living, 5 dead) resulting the 70 hollows found. However significant mature trees in the valley areas were not surveyed and some of these are likely to be affected or removed to make room for access tracks, road construction and other sequelae of major infrastructure construction. It can take up to 150 years for eucalypts to develop nest-appropriate tree hollows which are critical to the

reproduction of bird species such as the parrots (eg. superb parrot – a vulnerable species).

7.2.3 No survey was conducted of roadside vegetation, often the location of vestigial native vegetation, despite the fact KMA states there are some "small patches of native grasses on rocky sites and road sides". Some areas of roadside have significant mature trees, with hollows (Figures 7.1 and 7.2**).**

7.2.4 There are 80 kilometres of narrow, poorly maintained, often gravel roads that are expected to provide access to the proposed wind turbine sites. Many are less than 5 metres in width and it is axiomatic that these roads will require widening to accommodate a large number of over size, over long and over weight vehicles. Because of this almost all roadside vegetation and large trees will almost certainly be removed or cut back. This will have a significant impact on the number of tree hollows available for nesting as well as vegetative corridor destruction.

7.2.5 The statement contained in the KMA report that it is the ridge tops that retain the best remnants of the box grassland association and where remnants of native grasses best survive. Despite assurances that minimal trees will be removed both the construction of the turbines and power cables (both underground and overhead), the foot print of the turbines themselves and the access tracks and turning circles for over long vehicles, the substation and other infrastructure will have a cumulative effect on the remnant native trees and grasses found on the these very same ridgelines where the turbines are to be situated.

7.2.6 KMA state that only 1.1 Ha of native vegetation will be removed. There is no explanation as to how this figure was derived. If this is merely the addition of the areas of the estimated number of isolated trees to be removed this is not indicative of the area of fauna habitat and vegetative communities which are likely to impacted. Moreover the report states: "The exact loss of trees cannot be quantified at this time as the location of the infrastructure, particularly tracks and cable routes, has not been finalised." **The fact that this has not been finalised before the release of the Environmental Assessment is extremely poor and makes any assumptions made suspect.**

7.2.7 Mention is made that any removal of trees or vegetation can be made good by the use of biodiversity credits or offsets. There are no details. Does this mean simply the planting of a 1.1 Ha wood lot? This cannot compensates for the removal of mature trees especially if they have tree hollows

7.2.8 In the EA tabled Correspondence Forest NSW has requested that impact of the planned transmission lines on the plantations of **Canobolas State Forest** be surveyed and **investigated. This does not appear to be part of the Flora and Fauna Report by KMA and it is assumed this government departmental request has been ignored.**



Figure 7.1 GAP ROAD CARCOAR.
One of the main access roads for over long and over mass vehicles delivering turbines to the proposal site



Figure 7.2: ERROWANBANG ROAD CARCOAR

This road will access the proposed wind turbine sites from the Mid Western Highway

7.3 FAUNA (EXCLUDING BAT FAUNA)

7.3.1 Within the avifauna found in the Flyers Creek area are significant numbers of parrots. The **superb parrot** (*Neophema swainsonii*) (vulnerable under the NSW TSC Act and the Commonwealth EPBC Act) (Figure 7.3) is present particularly in the breeding season and requires tree hollows for nesting. The Flyers Creek area lies at the northern edge of the superb parrot's range and any interference in the breeding capabilities of this bird would **not comply with either Act**. It seems inevitable that some trees with hollows will be removed during the construction of the FCWF.

7.3.2 Although not endangered other species of parrots also use tree hollows for breeding. Thus the removal of trees with hollows will increase competition for nesting sites resulting in further pressure on the superb parrot population. Parrots found in the area that also use tree hollows include the **crimson rosella** (*Platycercus elegans*), **eastern rosella** (*Platycercus eximius*), **cockatiel** (*Nymphicus hollandicus*), **red-rumped parrot** (*Psephotus haematonotus*), and the vulnerable **turquoise parrot** (*Neophema pulchella*) [72].

7.3.3 The **wedge tailed eagle** (*Aquila audax*) (Figure 7.4) – a climax avifauna species – was sighted in the fauna survey. Local knowledge confirms the presence of a nest in the northern sector of the FCWF area. The wedge-tailed eagle is so identifiable, powerful and omnipresent that it is hardly surprising that they have a strong presence in Aboriginal custom and mythology.[41] As such any pressure on wedge-tailed eagle habitat, breeding or range can risk the threat of local extinction thereby affecting indigenous customs and beliefs. There is no suggestion that this is addressed in the Environmental Assessment.

7.3.4 Risk factors for birds, particularly those prone to fly at great heights such as the raptors are significant and include:

- Collision with moving turbine blades, with the turbine tower and associated infrastructure such as overhead power lines, or in the wake behind the rotors causing injury, leading to direct mortality;
- Disturbance displacement from around the turbines or exclusion from the whole wind farm. Reduced breeding productivity or reduced survival may result if birds are displaced from preferred habitat and are unable to find suitable alternatives;
- Barriers to movement disrupting ecological links between feeding, wintering, breeding and moulting areas and extended flights around wind clusters, leading to increased energy demand potentially reducing fitness;
- Change to or loss of habitat due to wind turbines and associated infrastructure.

7.3.5 Thus wind energy facilities can have detrimental impacts on birds, bats and other fauna in four fundamental ways:

- Collision mortality
- Loss or degradation of habitat
- Disturbance and subsequent displacement form habitat
- Disruption of ecological links

7.3.6 Raptors and other large birds of prey often soar where wind turbines are best sited and may be attracted to their deaths by vegetation and prey around the turbines. These birds cannot sustain big losses because they breed so slowly. International experience has shown that important raptor populations can be wiped out or significantly reduced. [65] Locally the ridgelines associated with the proposed FCWF are shrouded in mist, particularly in winter, which further endangers raptors flying at height near the turbines.

7.3.7 The following plan from KMA for overcoming the probability of blade strike is:

- the turbines should have no perching places;
- dead animals (e.g. sheep carcasses) within 200 metres of a turbine should be removed as soon as possible;
- lambing should not occur in paddocks with turbines;
- road kills on site access tracks should be removed if they are within 200 metres of a turbine;
- the turbine and other facilities should not have lights, other than safety lights for aircraft navigation as required by government authorities, to minimise attracting nocturnal birds and bats;
- buildings, poles or other structures should not be constructed within 200 metres of turbines as they provide perching opportunities for birds of prey.

7.3.8 There is no indication in the Environmental Assessment that any of these recommendations will be put in place. For instance, who will remove dead animals and road kills? The host or the energy company? Who will monitor the effectiveness? Who will ensure that the farmer does not allow lambing beneath turbines? In any event these suggested above are unlikely to be sufficient to negate bird mortality.

7.3.9 The EA states that overseas experience is that collision mortalities are actually low and that this is not considered to be of great concern for FCWF. A recent review by Sprague et al[65] raises concerns that bird kills in Canada and the USA are greater than previously reported, and the potential for collision fatalities increases with increasing height and increasing rotor-swept area of the greater size of modern industrial wind turbines. Wind turbulence is also increased with turbine size and represents further danger for bird and bat flight. Problems with monitoring are also important which may affect the result of carcase surveys. Monitoring the impact of active turbines on birds typically involves regular searches for corpses beneath the turbines.

Monitoring is often a condition to project approvals, at least for the first few years of operation. Most wind energy producers do not publish the studies and methodologies use to arrive at their mortality estimates. **There is no indication in the EA of any methodology for monitoring bird and bat collisions and no indication that results will be publicly available.**



Figure 7.3 Superb Parrot (*Polytelis swainsonii*)
Flyers Creek is at the northern limit of the superb parrot's breeding range. Preservation of tree hollows for nesting is critical. (Photographed in the vicinity of Flyers Creek area)



Figure 7.4 Wedge-tailed Eagle (*Aquila audax*)

Raptors are vulnerable to collision mortality (blade strike) and to loss or destruction of habitat affecting breeding success. (Photographed in the vicinity of the Flyers Creek area).

7.4 BAT FAUNA

7.4.1 Greg Richards and Associates (GRA) have historically been involved in several assessments in association with Newcrest's Cadia Valley Operations, a gold and copper mine located in close proximity to the proposed Flyers Creek Wind Farm. GRA has been requested by Aurecon (for Infigen Energy) to look at the impact of wind turbines on bats. Bats found in the area are micro bats; macro bats are not indigenous to the area.

7.4.2 In previous studies carried out for Cadia Valley Operations[12,13] GRA mentions **two vulnerable micro bats** (listed in the NSW TSC Act): the Yellow-Bellied Sheathtail-bat (*Saccolaimus flaviventris*) and the Common Bentwing-bat (*Miniopterus schreibersii*).

7.4.3 In GRA's report to Aurecon only mentions the Yellow-Bellied Sheathtail-bat as vulnerable, but not the Common Bentwing-bat. Presumably this is because the latter was not recorded on survey. However its presence will be very likely. The Common Bentwing-bat is migratory and has been used as a reason for not considering this species significant. There was only one period of observation and populations vary from year to year and season to season. The reported infrequency of observing these micro bats seems to be little justification for coming to the conclusion that any referral under the Act is not warranted.

7.4.4 Micro bats are largely insectivorous and consume enormous numbers of insects. Studies in the USA for instance have shown that a colony of just 100 small bats can consume a quarter of a million mosquitoes and other small insects per night which has significant consequences for insect control in Agriculture[9]. Savings to Agriculture can run to the 10's of millions of dollars. But with the advent of wind turbines the death of significant numbers of small bats has meant that costly insect control by chemical insecticides has been required. In 2010 in Pennsylvania it has been estimated that 420 wind turbines killed more than 10,000 small bats. This level of decimation, if extrapolated to Flyers Creek for instance, would result in a mortality rate of 1,000 micro bats per year.

7.4.5 Micro bats are nocturnal and therefore feed at night. Their vulnerability to wind turbines is exacerbated by aircraft navigational warning lights which are often required to be sited on wind turbines. The insects that are attracted to the lights in turn attract the bats. Rather than blade strike it has recently been found that the bats are affected by barotrauma due to the moving blades of the wind turbines causing a drop in pressure[6]. Bats have proportionally larger lungs and hearts than most other mammals, and have blood-gas barriers that suddenly expand and are also much thinner. This makes them much more susceptible to barotrauma resulting in pulmonary haemorrhage and ultimately death. The issue of navigational warning

lights is dealt with in Chapter 12. **This is an intractable problem around which the Environmental Assessment skirts.**



Figure 7.5 Micro Bat – Errowanbang

Micro Bats are susceptible to barotrauma and resultant fatalities

7.4.6 The EA does suggest that targeted monitoring at relevant times would reveal more information about the annual cycle of the Eastern (Common) **Bentwing bat** to confirm whether or not it is present in the project area at any time of the year. It also suggests monitoring birds and bats for collision mortalities after the turbines commence operation. This will apparently be looking at blade strike which in overseas reports has been shown not to be the reason for the reduction in micro bat populations, although it does seem to be more important with avian mortalities. **It seems unlikely that even if damage to local avifauna and bat fauna occurs that any realistic modification of the operation will occur.**

8. WATER

Director-General's Requirements - the EA must include:

1. an assessment of the potential impacts of the project on water supply, surface flows and groundwater, including:

2. details of the site water demand for the life of the project, and the availability of supply to meet this demand;

3. details of the impacts associated with construction on river crossings, adjacent water users, basic landholder rights and groundwater-dependent systems; and

4. details of any proposed interception of groundwater during construction, including predicted dewatering volumes, drawdown zones, water quality standards and disposal methods.

8.1 SUMMARY OF OBJECTIONS

Water: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

8.1.1 The water studies in the Environmental Assessment are not substantial and there has been little attention to water supply, surface flows and ground water.

8.1.2 Protection of the water via surface flows, in the event of an oil spill or other accident with hazardous material, is not detailed sufficiently.

8.1.3 The site water demand takes no account of water required in the event of fire.

8.1.4 There is no assessment of the leaching of heavy metals, and other components, from the concrete footing over the life span of the wind turbine, or of the decades following.

8.2 WATER SUPPLY, SURFACE FLOWS AND GROUND WATER

8.2.1 Although the Environmental Assessment contains some detail of creeks (ephemeral and permanent) there has been little discussion of ground water. The EA describes

fault lines to the west and the east of the wind turbine site, with minor fault lines within the development area. Yet ground water is significant and very variable throughout this whole area. It would seem that most of information about water has been obtained by desk top review. An idea of groundwater bores and uses would provide additional information on groundwater in the locality.

8.2.2 Local knowledge is informed for instance about the now defunct Browns Creek Mine which pushed through into a significant subsurface source of water unexpectedly resulting in the complete flooding of the mine. As a consequence the mine can not longer be operated and the site is now being rehabilitated by Australian Native Landscapes. There is no prospect of the mine being operational again.

8.2.3 In terms of mapping the area for water resources it would be useful to differentiate on the maps between ephemeral and permanent creeks. This would enable planning for surface works and tracks to be more focused. Knowledge of the springs throughout the area would also be an advantage. Farms in particular rely on springs for water supply and to fill dams.

8.2.4 Cadia Valley Operations, to the west, has a significant impact on subsurface geometry, and has procedures in place to minimise or eliminate any adverse affects of its mining operations on the water table. Nevertheless there are connections between ground water zones and a considerable volume of ground water passing through the development site at various times of the year, particularly in years of high rainfall (such as 2010 and 2011). Contamination of ground water will always be a problem when there industrial activities operating on the surface.

8.2.5 Given that groundwater will eventually find its way into the Belubula River and then the Lachlan River any contamination could have serious consequences. The Lachlan River is the water supply for several towns along its length.

8.2.6 Surface water may potentially result in a problem of contamination if there are soil or industrial product spills. Oil spill containment structures are discussed, but it does not say they will be bunded and constructed of impervious material.

8.2.7 The Environmental Assessment mentions an earth dam as secondary containment, but will it be satisfactory when there is a big storm filling the oil spill containment structure as well as the dam?

8.3 SITE WATER DEMAND

8.3.1 The EA also states that the water requirements will be minimal once the wind turbine complex is operational. Water is to be provided by rain run off for the most part.

There is no mention of water supply in the event of fire, either turbine fires or bush fires. While there is any possibility of such fires the supply of the water required to secure their extinguishment needs to be readily available (See Section 12: Hazards and Risks). This does not appear to be considered in the EA.

8.4 EROSION AND SEDIMENT CONTROLS

8.4.1 The Soil and Water Management Plan is not available for discussion.

8.4.2 Erosion and sediment controls are mentioned but will they be in accordance with the Landcom "Managing Urban Storm Water: Soils and Construction", ("Blue Book" Manual). This manual provides guidance in non-urban areas and is the usual reference for this type of work.

8.4.3 In Section 7.6.3, measures to manage access roads crossing water crossings will be determined "during the design phase of the project". When will the design measures for underground cables crossing watercourses be determined?

8.4.4 In Section 7.6.4, a septic system is discussed. A septic system may not be suitable for the site and will be dependent on soil type, rock, slope etc. This will be determined in an on-site effluent assessment. Other systems available are secondary treatment with irrigation.

8.4.5 In Section 7.6.5, spill response equipment will be maintained on-site, but will there be people on the site who will be able to react to an oil spill or will the site only be occupied sporadically?

8.4.6 If an oil spill was to occur, they feel they could effectively remediate it as it would only impact a relatively small area. But this would be dependent on soil type, moisture, rocks. Also, remediation by excavation may compromise the integrity of the footings of the building.

8.5 THREATS TO WATER QUALITY

8.5.1 The Environmental Assessment states that each wind turbine tower will be secured to a large, reinforced concrete footing with a diameter of up 12 metres and approximately two to three metres thick, requiring about 110 m^3 of concrete. The base of the footing will be about two to three metres below ground level and the footing may either be backfilled with soil or have the top of the footing above ground. The concrete footings are likely to be steel reinforced, tensioned and have rock anchors to bolt the footing to the underlying rock.

8.5.2 There is no mention in the EA of the specifications of the concrete to be used. Over time there will be some leaching of elements from the concrete which will be carried away through the ground water. This could include heavy metals such as mercury[66]. Because the concrete footing will be left in situ after the useful life of the wind turbine and this leaching could continue to occur for decades. There is no discussion in the EA about this and what measures that will be taken to prevent any such leaching.

9. TRAFFIC AND TRANSPORT

Director-General's Requirements

- the EA must assess the construction and operational traffic impacts of the project including:

1. Details of the nature of traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads, bridges and intersections, including any proposed road upgrades and repairs; and

2. Details of site access roads including how these would connect to the existing road network and any operational maintenance and handover requirements.

9.1 SUMMARY OF OBJECTIONS

Traffic and Transport: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

9.1.1 There is no Transport and/or Traffic Management Plan in place, and provided for *public scrutiny as part of the Environmental Assessment.*

9.1.2 Similarly there is no Construction Environmental Management Plan in place.

9.1.2 There is insufficient detail about the rectification, maintenance and upgrade of local Council roads.

9.1.3 There is insufficient detail about the upgrading and construction of farm access tracks and how they will meet environmental standards.

9.1.4 Blayney Shire Council has responsibilities in the area of shire roads, waste and ratepayer amenity. Questions of critical interest to the welfare of Blayney residents and ratepayers are unanswered.

9.2 TRANSPORT AND TRAFFIC PLANNING

9.2.1 The Environmental Assessment (Chapter 13) does now contain a Traffic Management Plan. This is alluded to as being part of the post approval stage when a plan will

apparently be developed in consultation with Blayney Shire Council and the NSW Roads and Traffic Authority (RTA).

9.2.2 Why has this been omitted from the Director-General's Requirements (DGRs)? It is noted that Infigen's documentation for its Bodangora Wind Farm near Wellington contains a Traffic and Transport Strategy. Knowledge of both localities (Flyers Creek and Bodangora) predicates that the rural road network around the Flyer's Creek area is much more restricted in both terrain and road tortuousness.

9.2.3 Similarly there is no Construction Environmental Management Plan included in the Environmental Assessment, one that will be important when considering environmental impacts of constructing access tracks through farms sufficiently robust to take the transport of turbine parts by Restricted Access Vehicles. Sensitive planning will be required to account for steep grades, watercourse crossings (some permanent, some ephemeral), and with alignment restrictions.

9.2.4 **It is not acceptable that neither a Transport/Traffic Management Plan nor a Construction Environmental Management Plan is available for public comment as part of the Environmental Assessment.**

9.3 ROAD ROUTES TO FCWF WIND TURBINE SITES

9.3.1 There appears to be two grades of roads for consideration, once traffic has left the Mid Western Highway:

(a) local, minor roads which are the responsibility for Blayney Shire Council to maintain. Estimated 80 kilometres. The Environmental Assessment does mention some road and corner widening but details are not reassuring. Infigen's assertion that roads will be left as they were found is also not reassuring since their present state in part is less than optimal and in fact often dangerous (sadly here has been a recent motor vehicle fatality, and one local bridge has been closed effectively blocking one of the local roads adjacent the FCWF).

(b) access tracks, mainly situated on farms. Estimated 37 kilometres. Infigen do refer to upgrading or constructing these. This is where the Construction Environmental Management Plan is critical, yet is omitted.

9.3.2 The history of energy companies' use of local roads during the turbine construction phase is poor. Drought or dry conditions in the Australian environment can make compliance easier because there is often little water flow through creeks and rivers,

and erosion of access tracks is easier to control. Over the last two years, with the breaking of a very long drought, there has been substantially higher rainfall. This has created problems for energy companies being unable to meet their conditions of consent. For instance, in June 2011 wind turbine construction traffic to the Macarthur Wind Farm in Victoria resulted in significant road damage due to heavy traffic. Potholes at least 20 cms deep over a 35 kilometre stretch of road were the consequence[14]. Consequently Moyne Shire is seeking to have the roads resealed by the energy company involved after construction is completed. Roads have become such an issue that Moyne Council has also refused to extend permits for the proposed Hawkesdale and Ryan Corner Wind Farm Projects. It seems that under the conditions of a State Significant Development (SSD) in New South Wales the local council (Blayney in this instance) would not have the same powers of veto. **It is the responsibility therefore of the Department of Planning to consider the road access by FCWF carefully with these critical aspects of road condition and use at the forefront. Therefore the Department of Planning and Infrastructure assume control of roads and transport by default.**

9.3.3 While there may be plans to be put in place with the RTA and Blayney Council, for the passage of RAVs along proposed routes, there is no guarantee that smaller vehicles (eg. concrete trucks, smaller delivery trucks) will not come by locally well known, more direct routes. Because there is no Traffic Management Plan in place there is no indication that this will be monitored, policed or otherwise managed in a safe and timely fashion.

9.3.4 Some of the local routes anticipated are patently inappropriate. Halls Road is a narrow, single track, gated country lane. Unless its ambiance and amenity were to be completely destroyed with the removal of significant trees and vegetation, there is no place for the passage of RAVs along Halls Road at all.

9.4 BLAYNEY SHIRE COUNCIL

9.4.1 From discussion with Council officers and Councillors there appears to be little depth of knowledge of the FCWF project and its ramification for Council and its ratepayers. It is known that consultations between Council and FCWF have not been significant or detailed.

9.4.2 Blayney Shire Council, as described above, is responsible for much of the road network involved in the construction and needs to have a detailed and intimate knowledge of the FCWF proposal before it can have an opinion on whether it is a desirable development for Blayney Shire Council. One assumes it has not been given

the opportunity. Certainly there is no indication that it has been involved to any great extent in the various management plans that will be required.

9.4.3 Blayney Shire Council has not made this FCWF proposal an item for significant and in-depth discussion at its Council meetings. There has been no resolution by the Council to, in principle, either support or oppose this proposal.

9.4.4 There are considerations for which Blayney Council seems not to have had the opportunity to consider, but which are pivotal to whether Blayney Council can absorb the impact of having such a large industrial complex present in the shire:

(a) Should the Council have been invited by either Infigen or the Department of Planning to have specific input into the Environmental Assessment? As it stands at the moment it seems that Council will be an "accessory after the fact" with no ability to have its opinion assessed by the public. While councils have no real input when the project is designated as a State Significant Development significance there is nevertheless an opportunity for them to make a real contribution to the planning phase when their local knowledge would be invaluable.

(b) The General Manager of Blayney Council suggests that Council will seek to have conditions imposed upon any Approval that may be granted by the Department of Planning. This is at best tenuous. Far better for Council to have had input in the first place and, as part of the EA, the public would be better able to assess the Council's position regarding the proposal.

(c) Is there any mechanism whereby Council can impose monetary conditions on Infigen to cover ongoing road maintenance and other infrastructure costs which may impose a future tax burden on ratepayers, or indeed taxpayers in general? Has Council negotiated, or does it intend to negotiate, with Infigen an agreement about making good road conditions and supporting these with bonds or bank guarantees?

(d) Has Blayney Council conducted any surveys, studies or road compaction studies to determine their suitability for the traffic that will use them during construction? Moreover it is the responsibility of Council to consider roads in the context of a longer framework than the 18 months of construction. What is the long term context of road maintenance over the (say) next 20 or 30 years for local usage and tourist traffic?

(e) Has Council given consideration to updating it Section 94 plan to accommodate industrial development such as a significantly large wind turbine complex?

(f) Will there be implications for hosts to wind turbines? In view of the fact that they will receive income from an industrial source, the rating of the land should be changed from rural to industrial.

(g) FCWF will impact on Blayney Council's services, general infrastructure (particularly roads) both during and after construction. What will be the provision for a Section 94 contribution or payment under a PVA? Noted is the fact that Muswellbrook Council charges a levy of 6.5cMT of coal extracted which is approximately 0.06% of coal value. A similar pro rate contribution should be negotiated with Infigen.

(h) Council will need to consider the impact of its waste disposal facilities on waste (see Chapter 13) resulting from construction and eventually from the removal of the wind farm with all its constituent parts (including non recyclable and hazardous). Council should insist on some form of bond or similar security to ensure it does not inherit liabilities for which the Blayney ratepayers will ultimately be responsible. There is no indication in the EA that there have been negotiations of any sort with Infigen.

(i) With this in mind there is also the question of the long term reliability of Infigen. This company has already sold its European energy interests (wind farms) and is attempting to divest itself of its interest in the USA. Moreover, an examination of the ASX share prices does not lend confidence as its share price has fallen by over 80% in the last 2 years. Council, with the support of the Department of Planning, should impose a bond or bank guarantee to ensure that the wind farm will be properly decommissioned and removed after its functional life span has been reached. This includes hazardous and non recyclable materials. Infigen has publicly stated that removal will be amply covered by the scrap material value but since this is 20-25 years in the future there can never be any degree of certainty of scrap metal and material prices, and to sell a project to host famers on this basis in reality amounts to fraud. No consideration has been given to increases in labour costs over the same period.

(j) The fact that Infigen opposes any sort of bond, imposed as a condition of consent, is a matter for great concern, and needs to be explained to the ratepayers by Blayney Council.

(k) Notwithstanding the fact that Blayney Council may ultimately face the consequences of a derelict wind farm, despite all assurances to the contrary (the experience of the USA is salutary in this respect) it should be explained by Council and Department of Planning that the responsibility for removal by law, and failing all else, can fall to the individual wind turbine host. This responsibility has almost certainly not been imparted to any of the host farmers who have signed up to date. The considerable financial impost of removing a wind turbine, scrap prices notwithstanding, will make a mockery of any income received during the lifetime of a functioning wind turbine.

10. INDIGENOUS AND CULTURAL HERITAGE

Director-General's Requirements - the EA must:

1. include and assessment of the potential impact of the project components on indigenous values (archaeological and cultural);

2. demonstrate effective consultation with indigenous stakeholders during the assessment and in developing mitigation options (including the final recommended measures) consistent with *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005)

10.1 SUMMARY OF OBJECTIONS

Indigenous and Cultural Heritage: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

10.1.1 The assessment of Aboriginal cultural heritage is superficial and has dismissed requests by Aboriginal stakeholders for further surveys as not necessary.

10.1.2 The assessment of the non-Aboriginal cultural heritage has also been dismissed as irrelevant and of no significance ignoring the fact that the pastoral history, and associated historic villages and buildings form a vital part of the district's cultural and built past.

10.2 ABORIGINAL HERITAGE (TRADITIONAL INDIGENOUS LAND USE AND CULTURAL VALUES)

10.2.1 The Flyers Creek area is known to be home to the Waradjuri people as identified in the Environmental Assessment. The EA states that as a result of over 170 years of farming and mining only a very small portion of the study area remains relatively undisturbed. *Even so artefacts were found during the course of this assessment.* Whilst pastoral activities and mining have been a major activity in the area during recent history the study has revealed the remnants that remain today show there were sufficient resources historically to support a moderate-sized population of hunter-gathers.

10.2.2 After consultation (by FCWTAG) with some elderly landowners who have lived in the area for some time we have been shown a location that a member of our group (with training in Aboriginal identification) can identify as campsite remainders, which are an indication of regular seasonal occupation. We have been told that previously an Aboriginal named "Billy" would come and camp in this area under a tree that is approximately 200 years old and this area was previously used by a significant number of Aboriginals. This site would be approximately 4 kilometres from the edge of the proposed wind development area and while not in the wind farm development's immediate area it confirms the existence of an Aboriginal population in this area.

10.2.3 The FCTWTAG has also been informed that the Wedge-tailed Eagle's nest in the northern part of the wind farm development and is over one hundred years old has significance to Aboriginal Culture. This should be confirmed by Aboriginal Stakeholders.

10.2.4 We note in the EA that nine new Aboriginal archaeological sites were identified with 32 artefacts. Seven of the nine sites were assessed as being of low, or low to moderate archaeological potential, but the PADs are considered to be of high potential significance due to their rarity and possible research potential to provide new information.

10.2.5 Austral (Infigen's consultants) confirmed that professional archaeologists view aesthetic significance as an attribute that can only be culturally determined by Aboriginal stakeholders. This has not been assessed as part of the EA.

10.2.6 The report submitted by Enid Clarke, Jirrah Freeman, Shawn Williams and Wayne Williams to Jonathan Upson on 10th November 2010, recommends that the area of the proposed wind development, and in the particular the area of the wind turbines and the transmission lines, be monitored by Aboriginal Stakeholders. This recommendation was made on their findings at the time of the field assessment when ground cover had very low to nil ground visibility due to high thick grass in the area. They also recommended that where artefacts were found that sub surface investigation or test pitting be done.

10.2.7 This wide spread monitoring and subsurface investigation requested by Enid Clarke, Jirrah Freeman, Shawn Williams and Wayne Williams *is considered not necessary*.

10.2.8 **Questions to be addressed:**

1. Why are the recommendations of Enid Clarke, Jirrah Freeman, Shawn Williams and Wayne Williams considered not necessary?

This is their Aboriginal heritage and this area has not been surveyed previously. There is only this one opportunity to do this otherwise Aboriginal heritage values could be lost forever in this area.

2. The EA has made eight recommendations to follow in regard to Aboriginal Heritage. Is there a guarantee that these will be followed?

3. Can Infigen Energy guarantee that work crews will be trained to recognise Aboriginal remnants and artefacts, and items of significance to cultural and heritage values? The very fact that sites have now been recorded suggests that further consideration should be given to endeavouring to preserve whatever is left of our areas Aboriginal culture.

4. Will the work crews have consideration for Aboriginal items of significance? The methodology used for the field assessment attempted to provide flexibility in response to onsite conditions and stakeholder and Client requirements. *Reference 11-3*

5. The field assessment was about finding out about Aboriginal heritage and protecting what is there, nothing to do with catering to Infigen's requirements, so why would the methodology used want to manipulate what is fact to suit the client's requirements? Once destroyed, culture and heritage can never be replaced.

10.3 NON ABORIGINAL HERITAGE ISSUES

10.3.1 The Flyer Creek area has an important rich pastoral history and mining history dating back over 150 years.

10.3.2 William Lawson played an enormous part in the early settlement and exploration of the new country west of the Blue Mountains. Lawson was the leader of the party, (Blaxland, Wentworth and Lawson) that crossed the mountains. Farming in the Bathurst area thrived under Lawson's command. Lawson himself became one of the largest stock owners west of the mountains and a front running pastoralist in his time.

10.3.3 Little evidence remains today of Lawson's rural empire with one exception, "Old Errowanbang" and its significant homes, out buildings and woolshed which are heritage listed. This sits in a lush rural valley that will be surrounded by turbines if the Flyers Creek Wind Farm proposal is approved.

10.3.4 It was in the time of William Lawson and William the Younger that the pastoral history of the area commenced. Other pastoral properties (in the immediate area of the proposed FCWF) had an interrelationship that marks them as a group of their

own. These properties “Errowanbang”, “Old Errowanbang”, “Millamolong”, “Sunny Ridge”, “Avonside”, “Willow Park”, “Cooramilla”, “Trevyln”, and the locality of

Browns Creek have played a significant role in the pastoral history of this area, enough so that people have written books about it. This area was obviously the back bone of the pastoral industry of our state, as is evident by the large number of significant wool sheds documented and the wool trail that went through the valley to the Spring Hill area and Carcoar so that the wool could be transported to Sydney by rail.

10.3.5 Each of the properties above has their own history but the EA prepared for Infigen on FCWF states:

“*No buildings within the project area have been identified as having any heritage significance.”*

This position should be re-visited as the rural history is significant to this area.

10.3.6 “Willow Park” still has plenty of evidence that points to its origins as part of the original “Errowanbang Holding” owned by the Lawson Family. When Arthur Roweth took possession he built a slab cottage which stands to this day behind the homestead. There is still evidence on this property of the ‘water race” constructed by Chinese labour to supply water to the mines at Burnt Yards. This amazing piece of engineering carried water for miles. The property also hosts a significant woolshed of value.

10.3.7 The “Errowanbang” Wool Shed (Hopkins Shed) was erected in 1913. The current owners took the courageous step of investing in the future of this great old building and converting it into their home. The restoration of the wool shed has been designed to retain its history, like the “Ferrier” wool press still standing in all its historical glory, in the centre of the lounge room. This form of restoration is a wonderful form of preservation that is able to turn an historic wool shed into a unique home, retaining the character of the old shed.

10.3.8 “Trevlyn” Wool Shed, Beneree: This property adjoins “Wallaby” and will be significantly impacted by the wind turbines that will be erected on “Wallaby”. This wool shed has significant value to the pastoral heritage of this area, along with the old homes that are also part of its pastoral heritage. This shed has continued to be used on a regular basis.

10.3.9 “Avonside” also rich in pastoral history and has a wool shed.

10.3.10 “Cooramilla” Wool Shed of great historical significance .

10.3.11 Other properties within the 5 kilometre radius with either significant (and in some cases heritage listed) homes and/or shearing sheds are “Coombing Park”, “Sunny Ridge”, “Sunny Downs”, “Stokefield”, “Highfield”, “Millamolong”, “Wongalong”,

"Angullong". These are just a few of the properties involved or adjoining the proposed FCWF all with a rich pastoral heritage that host significant buildings relevant to the history of this area.

10.3.12 The historic village of Carcoar (the whole village is heritage listed) lies 5 kilometres from the wind farm development area. The village is a regular destination for tourists and provides an exceptional experience for visitors. Apart from the extraordinary assemblage of Victorian architecture and associated buildings, Carcoar takes its history from the pastoral and mining activities that were so formative to its character. The agricultural landscape is pivotal to its context. The visual blight of 44 turbines on its doorstep would severely impinge on this. From a purely practical point of view the local economy is better served by a thriving tourist industry than it is by the mere 3 full time workers Infigen state will be employed once the wind turbine complex is operational.

10.3.12 Mining has been a great part of the history of this area and allowed the area to prosper at different times. It is part of the historical character of this area.

10.3.13 There is little doubt when you stand in the Flyers Creek area that you stand in the middle of our early Australian rural and mining history and this should not be sacrificed to this major industrial wind development that will damage the character of our cultural heritage and the future of pastoral activities.

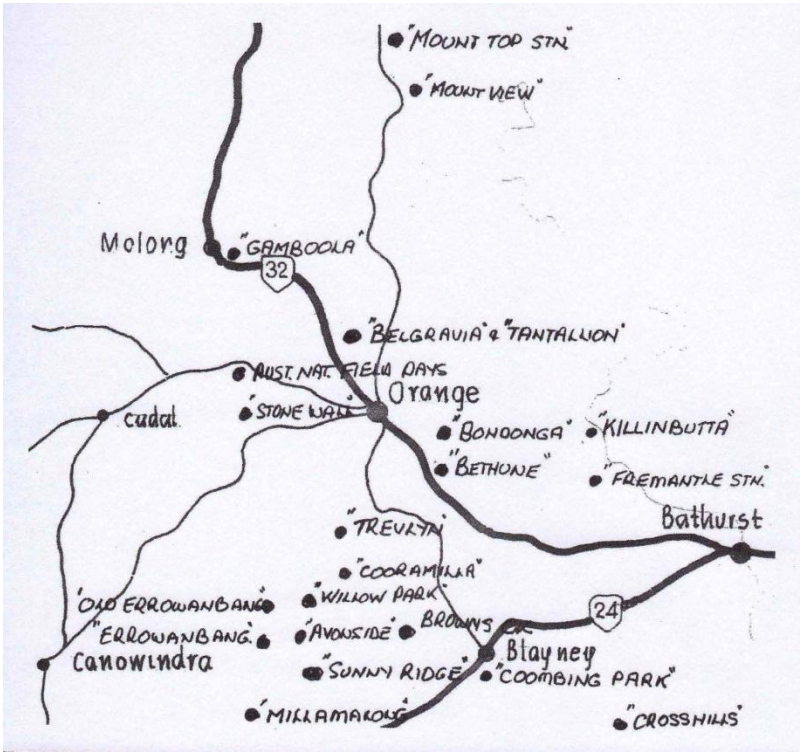


Figure 10.1: Sketch map of location of historical properties in Flyers Creek area – not to scale



Figure 10.2 Historic village of Carcoar

Source Materials:

Local landowners

Email from Enid Clarke, Jirrah Freeman, Wayne Williams, Shawn Williams to Jonathan Upson 10 November, 2010

"Wool Sheds The Anvils that Forged a Nation" by Russell Moor

Waradjuri Websites.

11 CUMULATIVE IMPACTS

Director-General's Requirements - the EA must:

There are no DGRs for cumulative impacts listed in the "Revised Director-General's Requirements".

The Environmental Assessment covers this topic in Chapter 17

11.1 SUMMARY OF OBJECTIONS

Cumulative Impacts: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

11.1.1 The environmental assessment (EA) for the Flyers Creek Wind Farm has significantly failed to properly address the cumulative impact of the Flyers Creek Wind Farm with other industrial activity currently taking place within the immediate Flyers Creek district, namely:

11.1.2 Cadia Valley Operations (Newcrest) gold and copper mine adjacent to the proposed wind farm, and

11.1.3 Blayney Wind Farm situated 8 kilometres from the proposed wind farm.

11.1.4 Other industries also add to the cumulative impact of industrialisation, making the addition of the proposed FCWF a significant deterrent to new residents seeking a rural lifestyle and associated tranquillity.

11.2 CUMULATIVE IMPACTS OF CONCERN

11.2.1 Chapter 17 – Cumulative Impacts, of the Flyers Creek Environmental Assessment notes;

The Department of Planning's Guideline for wind energy states that: *"Cumulative impacts may result from a number of activities with similar impacts interacting with the environment in a region. They may also be caused by the synergistic and antagonistic effects of different individual impacts interacting with each other and may be due to temporal or spatial characteristics of the activities' impacts."*

11.2.2 In the Executive Summary on page S-13, the (EA) states,

The main cumulative impact of multiple wind farm developments for the region is likely to be related to the combined visual impact of the wind farms at locations where more than one wind farm is visible. Flyers Creek Wind Farm is about eight kilometres to the north-west of the existing Blayney Wind Farm which comprises fifteen Vestas 660kW wind turbines. Due to distance, vegetation and/or topographic features, the cumulative visual impact is considered to very minor as discussed in Chapter 17.

Cumulative noise impacts from wind farms are not significant unless residences are within about 3 kilometres of both projects. As the Blayney and Flyers Creek projects are 8km apart, cumulative acoustic impact will not be an issue."

11.2.3 It is considered that the Environmental Assessment (EA) has grossly under estimated the potential cumulative impact of Blayney and Flyers Creek wind farms, from the point of view of visual impact and cumulative acoustic impact.

11.2.4 It is considered that the Environmental Assessment (EA) has grossly under reported on the potential cumulative impact of the Flyers Creek Wind Farm as negligible consideration has been given to the already present effect of the Cadia Mining Operation which flanks the NW sector of the proposal (See Figure 11.1).

11.3 FLYERS CREEK ENVIRONMENT

11.3.1 This section of the submission provides a brief summary of the Flyers Creek Environment with respect to industrial usage highlights erroneous statements made within chapter 17 of the (EA) and highlights the likely cumulative impacts not addressed by the (EA).

11.3.2 The Flyers Creek district is in general a picturesque rural setting, classified as 1A general rural zone within the Blayney Shire. The northern portion of the district hosts a majority of smaller "hobby farm" rural residences and retirees while the southern or down stream portion of the district is host to larger pastoral rural enterprises. People within the district value the tranquillity and view of the rural setting. In addition, the Flyers Creek district is also host to the Cadia Mine Operations which was recently granted approval for a significant expansion. The mining operation will border the western portion of the proposed wind farm (see Figure 11.1). We believe there should only be a limited amount of industrial scale use of such a rural landscape and as such would have concern over the cumulative effects of both the mine and the wind farm. This is particularly so for residences that are situated in between the two in terms of noise and visual amenity.

11.3.3 The total area of the Cadia Mine Lease is approximately 5,500 hectares (13,600 acres) and the total approximate project area of the proposed Flyers Creek Wind Farm is 6,000 hectares (14,800 acres). This is an approximate total of 11,500 hectares (28,400 acres) attributed to industrial land use in close proximity within an otherwise tranquil rural environment. There are very few rural landholdings that are greater than 500 hectares (1,200 acres) within the Flyers Creek district, and these are generally located within the far south. At their closest, the Cadia Valley mining lease and Flyers Creek Wind Farm project are as little as 1km apart.

There are a number of small rural holdings that occur within the thin corridor between the Cadia Valley Mine Operation and the proposed Flyers Creek Wind Farm.

11.3.4 There are several erroneous or misleading statements made within chapter 17 of the (EA). On page 17-3, section 17.4 paragraph 1, the (EA) states;

"The Cadia Mine, owned and operated by Newcrest Mining Ltd, is located about eight kilometres north-west of the Flyers Creek Wind Farm project."

This statement is misleading as the mining lease and proposed Flyers Creek Wind Farm project boundaries are **within 1km of each other**.

11.3.4 On page 17-3, section 17.4 paragraph 1, the (EA) also states;

"As the activities of the mine and the Wind Farm are so different, it is considered that the Flyers Creek project has a negligible cumulative impact in conjunction with Cadia Mine's activities."

The sheer consideration that on the basis of differing activities there will be negligible impact is in direct contradiction with the Department of Planning's Guideline for wind energy which as the (EA) has already indicated, states that: *"Cumulative impacts may result from a number of activities with similar impacts interacting with the environment in a region. They may also be caused by the synergistic and antagonistic effects of different individual impacts interacting with each other and may be due to temporal or spatial characteristics of the activities' impacts."*

The above statement also suggests that a proper investigation into the potential cumulative effects of both the mine and wind farm on behalf of the proponent may not even have taken place.

11.4 CUMULATIVE IMPACTS – FCWF AND CADIA MINE

11.4.1 Such close proximity between large areas of industrial land use and much smaller rural holdings will have the following cumulative impacts;

1. There is the strong possibility of the Flyers Creek district becoming over industrialised should the Flyers Creek Wind Farm be approved. The Cadia Valley Mine has recently been granted approval for a significant expansion (Cadia East Project Approval 2010). In what is considered a tranquil rural setting, the addition of another industrial activity on top of the already expanding Cadia mine site will result in over industrialisation of the Flyers Creek district. The land areas of the Cadia mine together with the proposed Flyers Creek Wind Farm dwarf the areas of rural holdings in the area. Many of the smaller rural landholdings of the upper Flyers Creek district have purchased due to the current rural setting of the district. A likely over industrialised perception of the area will likely lead to significantly reduced land values and contests the very reason for which families have resided in the area over the previous decade.
2. There is the possibility of additional cumulative industrial noise within the upper Flyers Creek district due to:

   a. the current Cadia Mine Operation and

   b. the Flyers Creek Wind Farm.

   When addressing the cumulative effects of the Blayney Wind Farm with the proposed Flyers Creek Wind Farm (Section 17.3, page 17-2, paragraph 2) the Flyers Creek (EA) states, "*Cumulative acoustic impact would only be a material issue if residences*

were located within about three kilometres of turbines from both projects". There are a number of residences that are within three kilometres of Cadia Valley mine and proposed turbines for the Flyers Creek Wind Farm project. Given that, it would seem likely that there would be a material cumulative acoustic impact for residences located within about three kilometres of turbines from the Flyers Creek Wind Farm and Cadia Valley Mine. **This possibility has not been addressed within the Flyers Creek Environmental Assessment**.

3. It is likely that the Flyers Creek Wind Farm will have a cumulative effect on visual amenity for residences that already have visual amenity decreased due to the Cadia Valley Mine. This will be further exacerbated for residents who, in addition to the Mine, will also suffer decreased visual amenity due to the proposed wind farm. While the Flyers Creek EA notes the potential visibility of the Cadia Mine from some parts within and near the Flyers Creek project, it fails to make note of whether this observation has been investigated/consulted or not, and therefore whether or not it is of any significance.

11.5 CUMULATIVE IMPACT – FCWF AND BLAYNEY WIND FARM

11.5.1 The cumulative visual effect of Flyers Creek Wind Farm and Blayney Wind Farm is dealt with in Chapter 6 of this submission but there is an issue of cumulative sound. There is 8 kilometres separating the two wind farms. Current work is indicating that there are adverse health effects from wind turbines due to noise impacts out to 10 kilometres[16,51]. If this proves to be the case then there will be impacts on health from the cumulative sound from both wind farms. **This issue is discounted as irrelevant in the EA.**

11.6 CUMULATIVE IMPACT – OTHER INDUSTRIES

11.6.1 Blayney Shire is a rural area mainly involved in agriculture (cattle, both beef and dairy, and sheep). The principle town is Blayney (3000) and several significant villages within the shire. New population is being attracted to the area (see population figures on Blayney Shire website: http://www.blayney.local-e.nsw.gov.au) because of its rurality and life style. Already this rurality is compromised by the increasing number of industries in the area (eg. Blayney Foods, Nestle's Purina Petcare, shipping container terminal etc). The establishment of a large wind turbine industry will detract still further from the very reason residents (established, new and potential) are attracted to Blayney Shire. Blayney Shire Council is anxious to see the population of the Shire increase thereby bringing increased economic activity and prosperity to the district. The industrialisation of the rural landscape by the intrusive nature of the proposed Flyers Creek Wind Farm will significantly impact the Shire as a destination of choice for those looking to adopt the "tree changer" life style. **Population will not increase with the establishment of the wind farm. The EA states there will be three (3) jobs only once the wind farm becomes operational.**

Information sources

Cadia East Project – Project Approval Section 75J of the Environmental Planning and Assessment Act 1979, January 2010, The Hon Tony Kelly MLC, Minister for Planning.

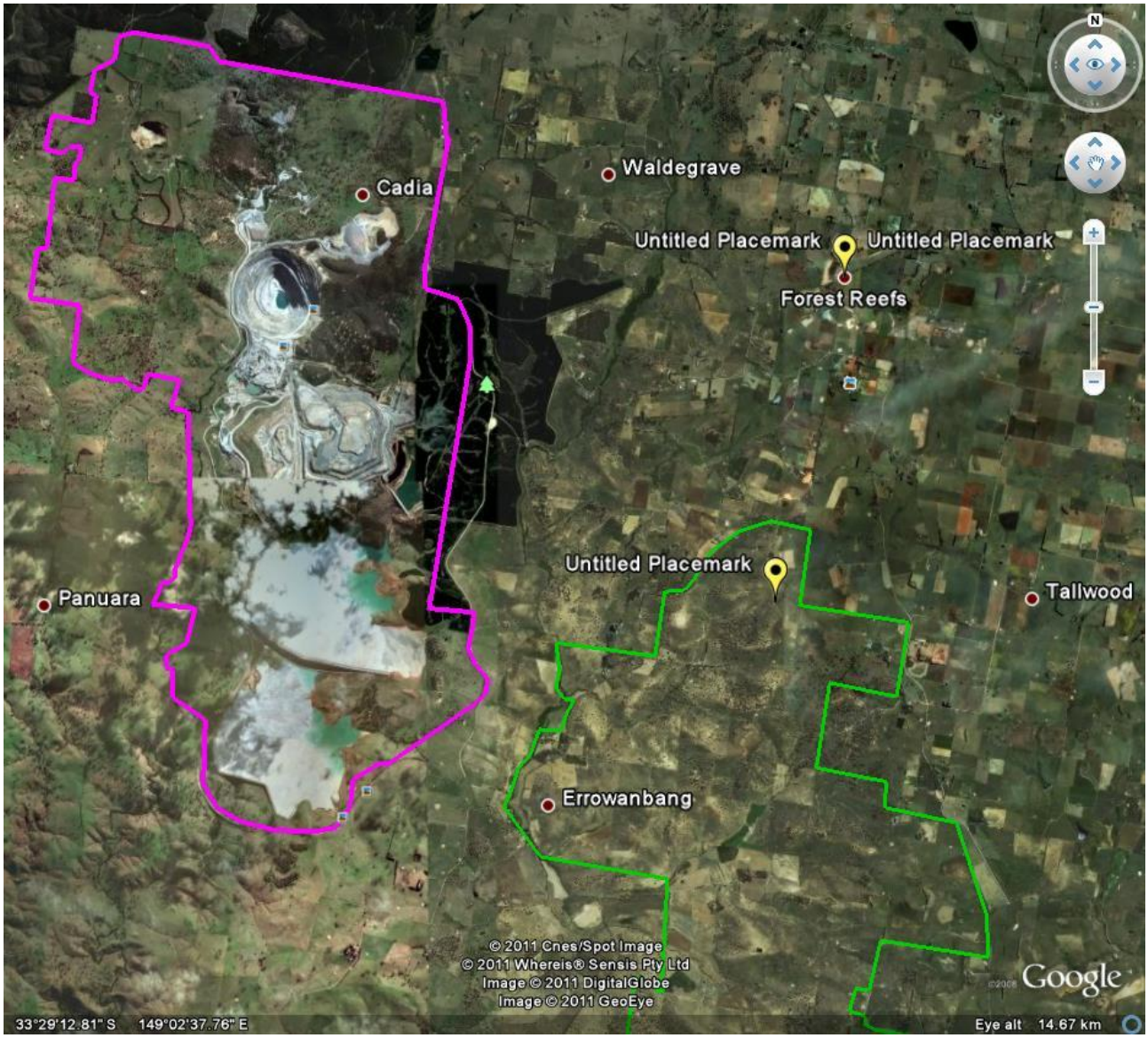


Figure 1.1: Google Earth image dated June 2010 highlighting the proximity of the Cadia Valley Mining and processing operations (pink outline) with the proposed Flyers Creek windfarm project (green outline). Field of view is approximately 17km across.

12. HAZARDS AND RISKS

Director-General's Requirements

- the EA must include an assessment of the potential impacts on:

1. Aviation safety considering nearby aerodromes and aircraft landing areas;
2. Defined air traffic routes;
3. Radar interference;
4. Bushfires;
5. Subsidence;
6. Communication systems;
7. Electric and magnetic fields.

12.1 SUMMARY OF OBJECTIONS

Hazards and Risks: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

12.1.1 The FCWF will interfere with aerial agricultural operations.

12.1.2 The FCWF will interfere with local aviation businesses and clubs.

12.1.3 Consultation with CASA and the matter of obstacle lights has **not** been dealt with adequately in the EA.

12.1.4 The impact of the proposed extension to the Orange Aerodrome has **not** been addressed in the EA, and the resultant changes in the Obstacle Limitation Surface OLS).

12.1.5 The impact of the proposed extension of Orange Aerodrome and future local radar requirements has **not** been addressed in the EA.

12.1.6 The ability for aerial fire fighting close to the wind turbines, and probably also land based fire fighting, is compromised with dangerous consequences.

12.1.7 49 residences are within the safety 2 km limit to the closest wind turbine recommended for **blade failure**.

12.1.7 The fire management plan is not formulated and is not part of the EA for public comment. Despite a small list of management options in the event of a fire in one of the turbines there is the risk of catastrophic sequelae to such a fire in a bush fire prone area.

12.1.8 There is no evacuation plan for Errowanbang Public School in the EA in the event of a bush fire.

12.1.9 There is restricted fire fighting capabilities due to distance and availability of the Rural Fire Service.

12.1.10 There is no description of exactly what mitigating techniques will be used in the event of **digital television reception failure**, nor who will be responsible for any rectification.

12.1.11 Future geophysical exploration and mining is compromised.

12.1.12 Accident mitigation is not adequately described.

12.2 AVIATION SAFETY

12.2.1 The Aerial Agricultural Association of Australia, as a result of the overwhelming safety and economic impact of wind farms and supporting infrastructure, opposes all wind farm developments in areas of agricultural or elevated bushfire risk. See Appendix 4.

12.2.2 Personal contact by a member of FCWTAG with the following:

- Orange Ultraflight Centre (a flight training company)
- Thomas Aviation (a flight training company)
- Orange Helicopters (charter and joy flights)

All three aviation businesses stated that they had **not** been contacted by Infigen Energy. All knew nothing about the FCWF. Particular concern was expressed about the proposal as it would interfere with their businesses, especially in the case of ultralites which usually fly at about 500 feet (about 150 metres – the proposed height of the wind turbines). This is another example of poor consultation with the community and affected businesses.

12.2.3 Consultation with the Civil Aviation Safety Authority (CASA) appears to be minimal with no correspondence tabled. The EA makes the argument that safety lights will probably not be necessary, based on experience at another Infigen installation. There is no basis for this comparison given. For instance, what distance is the Capital wind farm from the nearest commercial aerodrome? There is an acceptance that, if required by CASA, obstacle lights (narrowly focused and on the nacelle) would be installed but this important aspect is given minimal consideration and is barely acknowledged.

12.2.4 Because of the lack of information in the Environmental Assessment it is appropriate to consider the effects of a representative style of light that is used routinely in Australia: a pair of red, 2000 candela medium intensity, intermittent synchronised light-emitting diodes (LEDs), on the top of the narcelles. The selected LED light source of medium intensity is 2000 candela. A candela is the unit of luminous intensity with one candela equal to the light emitted from a single wax flame. For argument's sake if all 44 turbines there would be a total of 88 lights which would equate to 176,000 intermittently flickering on and off, 365 nights per year. This has ramifications for light pollution, disturbed night sky and sleep disturbance, and interruptions of circadean rhythms. Of significant in agricultural industries such as sheep and horse breeding disrupted night lighting can affect hormonal and reproductive cycles. The Environmental Assessment intimates that not all turbines will require lights but no indication from CASA is presented and this seems to be an uncorroborated expectation.

12.3 DEFINED AIR TRAFFIC ROUTES

12.3.1 Two major airports were considered regarding interference by the wind farm on air traffic: Orange Aerodrome and Bathurst Aerodrome. Of the two, Orange Aerodrome is 13 kilometres from the nearest wind turbine and is presently considered to be outside the Obstacle Limitation Surface (OLS).

12.3.2 The situation with Orange Aerodrome seems likely to change. Plans are being considered to extend the aerodrome to accommodate larger aeroplanes, up to the size of a Boeing 737. This would have significant implications for the OLS which would require extending further towards the FCWF, and indeed may compromise the siting of several of the northern wind turbines. This has **not** been addressed in the Environmental Assessment.

12.3.3 Airservices Australia recently identified Turbines 3, 4, 19, 20 and 33 as affecting the current NDB-A (approach) procedure. Airservices Australia has indicated that they could possibly make the modifications necessary to the NDB-A approach plan to

accommodate the proposed wind turbine layout. They are apparently in the process of confirming this advice but this does not seem to be finalised. How does the extension of the Orange Aerodrome affect this premise? Will more turbines be involved? Will this then affect, or make more difficult, the modifications proposed to the NDB-A approach plan? The EA does **not** address these issues.

12.4 RADAR INTERFERENCE

12.4.1 It is accepted that wind turbines can pose a risk to air traffic control and safety by the generation of two adverse effects on radar:

- The tower and blades act as a reflector and present a **static target** to the radar system. This has the effect of swamping the receiver and making it blind to wanted targets in the immediate area beyond the turbine. It is thus not possible to see these targets. This effect is constant.

- The rotating blades of the turbine impart a **Doppler frequency shift** to the reflected radar pulse, which the radar displays as an aircraft. This effect depends on the orientation of the turbine to the radar, which varies with the wind direction.

The consequences of these effects are that, in the first instance, aircraft in the vicinity of the wind turbines may simply "disappear" off the radar screen. In the second instance, "false targets" may be generated on the radar screen, thus appearing as aircraft that may be in conflict with other real aircraft. Both of these radar distortion effects generate significant safety concerns.

12.4.2 The EA states that there are no radar sites listed within 50 kilometres of the FCWF and therefore radar interference is not a factor. This situation may change, or require to be changed, in the future especially with planned airport extensions and therefore necessary facility upgrades. With a life span of 20 to 25 years the wind turbines may have a significant influence on what may be possible over the next several decades. With the extension of Orange Aerodrome and the resultant accommodation of larger aeroplanes (Boeing 737, with possible pressure to allow larger aeroplanes in future years) radar may become a requirement. At the moment the carrier with the largest aeroplanes is Regional Express. Landings and take offs are visual only. There is already regular disruption of flight timetables due to weather and visibility constraints with planes sometimes returning to Sydney without landing. As bigger aeroplanes access the aerodrome, with larger economic and timetable considerations, radar assisted landings and take offs will undoubtedly become mandatory. The EA does **not** address this issue.

12.5 BUSH FIRES

12.5.1 The EA classifies the relative risk of bush fire damage is very low to moderate (p.16-11). Correspondence from the Rural Fire Service of NSW to Aurecon states that the FCWF area is bush fire prone. The EA further states that a bush fire management plan will be prepared by the project contractor with the local Rural Fire Service and the NSW Fire Brigade. It is not clear whether this is for the construction or the operation phase, or both. In any event the bush fire management plan is to be part of the project EMP.

12.5.2 The Environmental Management Plan (EMP) is **not** part of the EA. This is a failing of the EA that all the Management Plans cannot be viewed by the public as part of the EA process, and comment therefore is restricted. As it stands there is no discussion, except cursorily, in the EA as to how FCWF will manage the requirements of the NSW Rural Fire Service, viz:

- The plan to address fire management on a landscape scale;
- Specific requirements under *The Rural Fires Act 1997;*
- Water supply for fire fighting purposes, its location and use by/compatibility with NSW Rural Fire Service Tankers;
- Fire fighting capability and preparedness;
- Access to the infrastructure including alternate emergency access/egress;
- Location of fire trails – construction and maintenance;
- Prescribed burning for fuel reduction or ecological management;
- Details of liaison with the local bush fire mitigation officer and how the plan fits with the district bush fire risk plan.

12.5.3 From enquiries by FCWTAG is appears that Canobolas Rural Fire Service have **not** formulated any plans or guidelines for fighting fires within a wind farm precinct. As it currently stands it is the Brigade Captain's responsibility on the day.

12.5.4 Blayney Shire Council has **no fire plan** that includes a wind farm. It has referred the FCWTAG back to the EA for information.

12.5.5 The issue of aerial fire fighting capabilities has **not** been addressed in the EA. In the Australian context this is a common method of accessing fires, both accessible and inaccessible. The height of the wind turbines and the design of the array inhibit the ease of aerial fire fighting. Personal communication (D. Coleman) with a pilot experienced in aerial fire fighting stated that the decision whether to fly in to fight fires was currently up to the individual pilot. Wind turbines can also cause operational issues for the pilot due to the drop height (approximately 20 metres), as

well as wind speed and turbulence, and other factors including debris from blade throw.

12.5.6 Should a bush fire or operational fire involve a wind turbine there are other issues involving the structural make up of the turbine. The composition of the turbine blades in particular is complex and the gearbox in the nacelle contains many hundreds of litres of oil. A fire in this environment rapidly becomes a HAZCHEM fire with its own fire regulations. Locally brigades are apparently allowed in but have to get permission first to fight the fire close to the turbine due to **toxins** being emitted. The EA does **not** mention this aspect of fire danger.

12.5.7 Fire has been found to be the second most common cause of incidents with wind farms (Appendix 5). Fire can arise from a number of sources and some turbines seem more prone to fires than others. A total of 164 fire incidents were found internationally between 1990 and 2011 (September). It is noted that the biggest problem with turbine fires is that, because of the turbine height, the fire brigade can do little but watch itself burn out. While this may be acceptable in reasonably still conditions, in a storm it means burning debris being scattered over a wide area, with obvious consequences. In dry weather there is obviously a wider-area fire risk, especially for those constructed in or close to forest areas and/or close to housing. Classically Australia's worst fires are in hot ambient temperatures associated with strong, dry westerly winds. The FCWF area is very prone to these summer conditions.

12.5.8 This is amply borne out by fact that there have been turbine fires in Australia: Lake Bonney (2006), Cathedral Rocks (2009) and Waubra (2001). At Waubra it was reported that

> "Local fire fighters could do little but watch the blaze from half a kilometre away as the situation was deemed too dangerous to approach, according to a local report. On arrival, WorkSafe officers then ordered fire fighters a further 500 metres away as burning tips of the blades were flying off from the structure". (Appendix 5)

12.5.9 The scenario to be addressed is the proximity of homes to the wind farm (many in the < 1 km to 2 km range). If fire fighting in and around wind turbines is hampered or indeed becomes non existent, then these homes (including farm infrastructure, land, stock and machinery) are at increased danger. The proposed FCWF is a relatively densely populated rural area and property potentially in danger is significant. Are there insurance ramifications for properties adjacent or in close proximity to wind farms? There is **no** attempt in the EA to address these issues.

12.5.10 Special attention needs to be paid to Errowanbang Public School. This is situated in a valley with turbines placed on the ridgelines above it. Grass fires in particular move with great speed especially if there is a delay in their containment. There is no evacuation plan for these children. Historically Errowanbang Public School had small numbers of students (typically around 10). This has however increased in recent years to about 40. In 1985 there was a severe bush fire that raged in the area for several days. The fact that there were few pupils enrolled at the time and that it was January school holidays meant there was no cause for concern with school children harm at the time. This simply emphasises the fact that fires can be expected and the evacuation of 40 children, with limited staff, could be extremely problematic.

12.5.11 This problem of fire fighting capability is exacerbated by several factors:

- Unlike Cadia Valley Operations (Cadia Mine) close by where there is a large work force that could be deployed to fight fires, there will not be a large enough employee base at FCWF to be of any assistance. The EA mentions that there will only be 3 jobs in the operations phase.

- The closest Rural Fire Service is at Tallwood, near the northern end of the proposed area and operated by volunteers who require paging, and necessarily take some time to assemble. A similar situation exists at Carcoar and Mandurama, both 5 kilometres from the southern end of the FCWF. The Canobolas Rural Fire Service Headquarters is located on the southern outskirts of Orange and is even further away.

- The supply of water for fire fighting, particularly in the event of aerial helicopter water bombing being employed. This fire bombing helicopter can consume copious reserves of water – up to 9,000 litres of water in around 40 seconds.[1] Water supplies vary considerably throughout the area. While CVO and Orange have some significant water storage most water is stored in small agricultural dams which, in drought times especially, may be very low.



Figure 12.1 Wind turbine fire at nacelle. Caused by high wind conditions. Scotland, December 2011
Fires are difficult to extinguish due to the height of the turbine and the HazChem nature of the fire itself.

2.6 COMMUNICATION SYSTEMS

12.6.1 The EA states "Digital TV is not susceptible to visible ghosting degradation where the signal level is above a minimum threshold. The area surrounding the wind farm is expected to be a medium to high level signal area. However there may be a few individual houses located in shadow areas where other mitigating techniques may need to be applied." The EA does **not** address the issue of who will arrange and pay for these mitigating techniques, and how it will be legally enforced.

12.6.2 Further the EA states "It is recommended that operators of point to point radio systems that cross the wind farm site, PMP operators identified in section 9.9 above, the Commercial Television Station operators in the area, Broadcast Australia for the ABC and SBS and Air Services be advised of the wind farm project to enable these organizations to confirm that there are no potential interference issues seen to be relevant to their operations." There is **no** evidence, with the possible exception of Air Services Australia, that this has been done.

12.7 ELECTRIC AND MAGNETIC FIELDS

12.7.1 The EA states that the substation will be approximately 14 kilometres from the Mid Western Highway and on private land at about 500 metres from the Beneree-Errowanbang Road. Ground truthing by the FCWTAG has found that the substation

will actually be approximately 300 metres for residence #87. Apart from the visual impacts of this inappropriately located substation, the issue of possible health impacts by EMF at this distance has **not** been addressed.

12.8 GEOPHYSICAL EXPLORATION

12.8.1 The NSW Department of Primary Industries states that "There are significant concerns with the proposal with regards to its potential impacts on mineral resources as it is sited on highly prospective ground and has the potential to adversely impact on mineral exploration and any future mining within the area." The northern part of the proposal area is particularly important where a low grade mineral resource has been delineated. Electromagnetic geophysical methods, drilling and helimagnetics have been and will be used in this area.

12.8.2 The DPI requests that the EA acknowledge the potential impact of the wind farm upon the ability of mineral exploration companies to continue to conduct effective exploration of the area and any future mining that may take place and what measures will be taken to minimise the impact. Of chief importance is the potential impact of the location of the turbines and how they may become obstacles to airborne geophysical surveys and drilling rigs, or whether they may produce geophysical artefacts that could hamoer the interpretation of geophysical data. The precise location of the underground and overhead cables and any related infrastructure also needs to be considered and what effect they may have on geophysical surveys, particularly electromagnetic ones, and what can be done to minimise such effects.

12.8.3 The EA does little to address these requirements and states that the mineral exploration by aerial survey will be restricted in a similar fashio to agriculture aerial services. The EA further states that there is still a time frame before construction is complete for aerial surveys to continue. The matter of interference with electromagnetic surveys and the effect of the wind farm and infrastructure upon the accuracy of such surveys is ignored.

12.8.4 In view of the proximity of Cadia Valley Operations (1 km between closest boundaries) and the probable extension of CVO mining operations in the future, this is of significant importance. There is no evidence of any "memorandum of understanding" between Infigen/FCWF P/L and the two prospecting companies (Climax and Goldminco) who have prospecting rights over the wind farm development area that there will be restrictions to prospecting over the next 25 years. There is also no evidence of a "memorandum of understanding" between Infigen/FCWF P/L and Cadia Valley Operations that there will be restrictions on

mining operations for the next 25 years. The requirements of the Department of Primary Industries do not appear to have been satisfied.

12.9 ACCIDENTS

12.9.1 Caithness Windfarm Information Forum provides up to date international data on wind turbine accidents (Appendix 5). The most recent edition has data up to 30th September 2011. The overwhelming conclusion is that wind farms are actually **large wind turbine industrial projects** with the concomitant risk of significant accidents. This is borne out by the data collected and, as expected as expected the more turbines that are built and the larger they become, more accidents occur.

12.9.2 Within this data base are Australian accidents, although it is postulated that these are probably underreported. Many accidents, particularly if minor or undetected by the public, are not necessarily reported in the press. However there are at least 6 accidents to humans (2 fatal), 5 of blade failure, 3 of turbine fires (see 12.5.8), and a reported 22 total deaths of wedge-tailed eagles at Woolnorth in Tasmania. There was one report of excessive road damage while construction was taking place in SA. There have been at least two (probably more) occasions where wind turbines have exceeded their noise limits and been shut down: Waubra in Victoria and Hallett 2 in South Australia.

12.9.3 In the CWIF database it was found that the biggest number of incidents was due to **blade failure**. This is important because of the potential for either whole blades or pieces of blade being thrown from the turbine. Pieces of blade are documented as travelling 1300 metres. The CWIF believe for this safety reason alone there should be a minimum distance of at least 2 kilometres between turbines and occupied houses, in order to adequately address public safety. The EA has several tables giving the distances of residences to the nearest turbine; this shows that there are at least 49 residences located less than 2 km from a turbine, including 7 less than 1 km. **This major safety aspect has not been addressed in any way in the EA.**

12.9.4 The EA, other than stating that incidents such as fire, blade failure and noise exceedence is unlikely to occur, have ignored their express duty of care to the public on these vital safety issues.

13. DECOMMISIONING AND WASTE MANAGEMENT

Director-General's Requirements - the EA must include:

1. an assessment of the key issues relating to Decommissioning;
2. an assessment of key issues relating to Waste Management.

13.1 SUMMARY OF OBJECTIONS

Decommissioning and Waste Management: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

13.1.1 The arrangements for decommissioning as set out in the Environmental Assessment are inadequate and provide both the host and the community with little security to ensure the timely decommissioning and removal of the wind turbines at the end of their useful life.

13.1.2 The argument for a decommissioning bond is dismissed by Infigen as unnecessary whereas research shows this is the only security available to the community. **The DGRs are not met.**

13.1.3 There is insufficient information provided in the EA concerning waste management in any of the construction, operation or decommissioning phases.

13.2 DECOMMISSIONING

13.2.1 Introduction

The Director-General is most specific in requiring details and arrangements for the decommissioning of the wind turbine array after its functional life has expired. Chapter 3 (Project Description) deals with it in a short paragraph:

"At the end of its economic life the wind turbine equipment will either be replaced with comparable new equipment or the wind farm will be decommissioned. Replacement of the wind turbines, or repowering, would be the subject of entirely new planning process. Decommissioning would involve dismantling and removal of the above-ground equipment and site rehabilitation. Turbine footings will remain buried at a level below the ground surface acceptable to the landowner. Access tracks

may be retained depending on the landowners' wishes. Any overhead lines no longer required will be removed."

It is not dealt with in Chapter 19 (Statement of Commitments). Wind turbine life span for FCWF is stated to be 20 to 25 years. There are few, if any, wind turbines that have completed this period of operation in Australia. The Australian experience does not include the decommissioning of wind turbines, and to obtain a measure of the issues involved it is necessary to review the overseas experience.

Wind developers and some host landholders claim that "scrap value" for turbines will cover or exceed decommissioning costs[11].

This assumption is **incorrect** and highlights that decommissioning issues are a critical problem the wind industry and the NSW Government should now be addressing. **Industrial wind energy developers are making exactly these same claims in planning applications that have been approved in NSW without question to date[11].**

FCWTAG has received a report from Waste Management consultant, J. Schneider, examining the implications of the decommissioning process, and has proposed that Infigen Energy pay a bond to cover the costs of decommissioning (Appendix 6). The report's analysis clearly demonstrates that the cost of demolition and removal will be approximately $100,000 per turbine (today's prices) and that there is no guarantee that scrap metal and material prices will be a profitable exercise. A bond of approximately $4,200,000 is proposed.

13.2.2 Overseas Experience of Decommissioning

A recent USA study on public record was independently commissioned regarding realistic decommissioning costs for a proposed 124 turbine project in West Virginia. Energy Ventures Analysis Inc (EVA) undertook this study and found that the wind energy company's decommissioning report stated that costs would be covered by income from sale of the scrap were ***incorrect***. **EVA found that the decommissioning costs for that particular 124 wind turbine development were underestimated by US$10million.** The final decommissioning estimate (**in 2008**) was US$100,000 per turbine. A prepaid bond estimate of US$12+million was therefore required at the start of the project. This is examined in detail by J. Schneider (Appendix 6)

Infigen management is on record as **not favouring** any **prepaid decommissioning bond.**

A decommissioning report (2007) looking at Comfrey Wind Energy's wind turbine project of fifteen Suzlon S88 2.1MW wind turbines with a height of 80 metres and a rotor diameter of 88 metres. It found that the total estimated cost to dismantle and remove each turbine, without scrap value was US $154,000. This is likely to be an underestimate since no infrastructure dismantling costs were submitted in this report[11]

The Vermont Public Service Board (2009) made a ruling relating to decommissioning for a project (Deerfield Wind Project – 30MW, 15 turbines) **in which scrap value was not allowed to be considered**. Among the findings were two that are appropriate for consideration in Australia:

- "The establishment of a fund to decommission the Project is necessary in the event the Project does not succeed, or to ensure its timely and permanent removal at the end of its useful life."

- "Salvage value for scrap is vulnerable to market price volatility and thus should not be considered a reliable funding source for decommissioning the Project. The amount placed in the decommissioning fund should represent the full estimated costs of decommissioning without netting out estimated salvage value."[11]

Future industrial wind energy projects in USA will more than likely require a prepaid bond, without inclusion of any scrap value. It is considered that the fluctuating nature of the scrap metal market cannot be relied upon to predictably cover the cost of decommissioning. Further the IWT industry has not factored any inflationary values for increased labour and maintenance costs at the 20 year expiry of IWT life.

There are currently 19,500 derelict IWT in California alone which remain idle, and for which no legal ownership can be enforced. Should this circumstance occur in NSW the Law would mandate that ownership would revert to the Landowner who would have to assume financial responsibility for turbine removal.

It should be noted that much of the materials contained in the IWT are of a hazardous nature and currently cannot be recycled in Australia.

13.2.3 Decommissioning in New South Wales

In 2009 the New South Wales Parliament, Legislative Council, General Purpose Standing Committee No. 5 held an inquiry into *Rural Wind Farms.* The Inquiry report made several recommendations, specifically recommendation 9 states: "*That the Minister for Planning address decommissioning of wind turbines in the NSW*

Planning and Assessment Guide for Wind Farms, including responsibility for decommissioning, the time period in which turbines should be dismantled and removed and how decommissioning will be funded. ***And that the Government consider requiring the developer to pay a bond."***

Should future government legislation in New South Wales require a bond to be paid by the energy developer, this would place an additional financial burden that may halt a project after a lease has been signed, potentially leaving the landholder tied to an onerous long term lease agreement without income. The potential problem should decommissioning not be underwritten is that this financial burden reverts to the landholder and/or the community.

The NSW guidelines should require for an Australian Bank Guarantee & upfront AAA bond to cover decommissioning costs at the start of the project. The government should administer the decommissioning fund.

It is worthy of note that current decommissioning and IWT removal does not remove the hundreds of tons of concrete foundation. This remains for ever - as may underground cabling!



Figure 13.1 Typical evacuation site of end-of-life wind turbine

13.2.4 Decommissioning Arrangements for Flyers Creek Wind Farm

Apart from the brief mention of decommissioning in the Environmental Assessment

there appears to be no decommissioning arrangements. When asked about this at a recent Council Community forum (28/11/2011, Blayney) Infigen's Senior Development Manager replied that **no bond would be necessary** as the scrap value of the turbines would cover all costs. In fact he resists the idea of a bond altogether. One assumes this is Infigen's official position.

In a letter to the NSW Department of Planning (22/07/2011) Infigen gives more information about its position on decommissioning than it does in the Environmental Assessment and, as such, bears reproducing:

"Infigen Energy takes responsibility for the decommissioning of the wind farms, including the wind turbines, as part of every one of our landowner agreements. In addition, it is customary, as in NSW, that decommissioning of the wind farm by the wind farm owner is required by the conditions of consent.

"The proposition that a company might abandon the wind turbines without decommissioning them faces several challenges:

1. "Historically, wind farms are far more likely to be re-powered (new turbines installed in place of the old turbines) than decommissioned.

2. "Even if the owner of a wind farm were to go bankrupt and leave the wind turbines standing, the scrap value of the wind turbines (towers, electric cabling etc) far exceeds the cost of bringing in a crane to dismantle the turbines. The value of scrap metal will only rise over time making this trade off even more favourable over time.

"The suggestion that a decommissioning bond be required is unnecessary, and simply represents another attempt ……. to add additional and unnecessary costs to wind farms. Such costs would inevitably have to be passed onto NSW electricity customers, **so we trust the NSW Government would reject including a decommissioning bond in the draft wind guidelines."**

There are several conclusions to be drawn here:

1. After 20 to 25 years there is no guarantee that Infigen will exist as a viable financial entity to assume its legal responsibility for decommissioning. The energy industry is inherently volatile and subject to takeover and acquisition. Its current viability is ultimately dependent upon **Government Subsidy** which has a finite and political end point. This does not mean that the responsibility to decommission will not be transferred to the next company, but it is easy to see this being a future difficulty with complex legal argument and ramifications. Experience throughout the USA has

found that some wind turbine farms have indeed been simply abandoned at the end of their functional life. To date it is reported that thousands of wind turbines lie abandoned with no one claiming responsibility or any enforceable legal ownership.

2. In NSW it is the land owner who bears the ultimate responsibility and should the land owner be left with abandoned wind turbines he will have to pay for and organise the decommissioning himself.

3. Infigen states that historically the wind farms are more likely to be re-powered. No wind farm in Australia is old enough for anyone to know what "historically" might happen. To contemplate the "historical" future is farcical.

4. The American experience is that the scrap value is always overestimated and in many instances will not cover the cost of removal. The landowner will therefore have to make up the shortfall, which will detract from the income he has received over the past 20-25 years. There is also the massive problem road transfer of bulk steel structures and the perennial problem of the adequacy of narrow country roads generally poorly maintained by impoverished rural Local Councils.

5. Of course, after 20-25 years the original landowner may have sold his property or younger members of the family may have taken it over. Someone who eventually owns the property for a shorter period than the 20-25 years may not appreciate having the reduced income from the turbines and yet still have to pay for decommissioning.

6. The only sensible and logical safeguard is to legislate for the prepayment of a bond by the energy company. This type of payment is now common procedure within the mining industry. At the Council community meeting (28/11/2011) Infigen's Senior Development Officer stated that there was **no need for a bond** because, unlike the mining industry, little was required in the way of rehabilitation. However the process of dismantling will require significant logical organisation: cranes, trucks (presumably the same RAVs that were required to bring the wind turbine on site – unless the wind turbine and its parts are dismembered into smaller units), new upgrading of roads and access tracks which conceivably would have fallen back to their rural, and secondary road status. The dismantling of cabling, overhead transmission lines and hazardous material would require specialist involvement.

7. J. Schneider in his report concludes:

To ensure funds are available to the Blayney Shire Council to cover costs of decommissioning, Flyers Creek Wind Farm developers should post a surety bond or equivalent financial security instrument that would be in place on or before the date thirty (30) days after the commencement of pouring of concrete for the first wind turbine foundation, and would be in place for the life of the project. The security would be renewed by FCWF annually, or another schedule agreed to by the Blayney Shire Council and the Flyers Creek Wind Farm developers.

The amount of the financial security should be at least $100,000 per turbine based on the figures demonstrated above, and as referenced to the requirements in the United States of America. Terms of the security should include:

- Designation of Blayney Shire Council as beneficiary;
- Terms under which funds would be dispersed;

- A provision that Blayney Shire Council could draw 50% of the funds if FCWF does not renew the security instrument prior to its expiration date; and
- An escalating factor to ensure that the full costs are covered when decommissioning occurs and/or abandonment of the project.

Every three years an independent engineering firm agreed to by both parties, will review the nett decommissioning costs in a report to the Shire Council. Any adjustment to the security value recommended by the engineer's report would be in place within ninety (90) days of delivery of the report to the Blayney Shire Council.

8. If bonds are not required under the old Part 3A assessment FCWTAG is not surprised that Infigen is anxious to complete the assessment and gain approval for the project before the possibility of a bond (leaving less profit) is imposed. This fact would explain its indecent haste as seen with the very truncated assessment period of 30 days (extended to 60) while Woodlawn Wind Farm had in excess of 100 days. Infigen is arguing any bond being payable as part of the new wind farm guidelines. **This is reprehensible and does not auger well for good community citizenship or relationships. The Director-General's requirements are certainly not met with respect to decommissioning.**

13.3 WASTE MANAGEMENT

13.3.1 Waste management is dealt with very perfunctorily in the Environmental Assessment and several aspects have been neglected. The issues of waste management are dealt with in more detail in the report provided by J. Schneider (Appendix 6).

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APPENDIX 1

LETTER REGARDING UNITED NATIONS

CONVENTION ON PERSONS

WITH DISABILITIES

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

Patina Schneider
101 Carbine Road
Forest Reefs NSW 2798

21st September 2011

Her Excellency Ms Quentin Bryce AC
Governor-General of the Commonwealth of Australia
Government House
Dunrossil Drive
YARRALUMLA ACT 2600

Dear Sir/Madam:

I lodge the following complaint against the Australian and NSW Government in relation to the terms and Articles contained in the **United Nations Convention on Persons with Disabilities**. The Australian Government are responsible for the **drafting**, **administration and enactment** of legislation that is driving wind turbine development throughout the states that make up Australia and the NSW government are responsible for the drafting, administration and enactment of planning legislation throughout the state of NSW. In addition, the Australian Government are the signatories of the aforementioned UN Convention and are bound by the terms contained thereof.

I would advise you that should the Australian and NSW Government permit (directly or indirectly), encourage, or are complicit in any planning consent awards for **ANY ADDITIONAL** wind turbines throughout Australia that does not comply with the provisions of the Convention, I reserve the right to make an application to the courts for an ***Interim Interdict/Injunction*** that would protect the legal rights of persons with Disabilities. The medical evidence is clear and unequivocal that wind turbines cause serious Medical and Mental health problems and exacerbate current Medical and Mental health conditions.

I submit my complaint as follows:

United Nations Convention on Persons with Disabilities:

1) Article 3 – General Principles: **(c) Full and effective participation and inclusion in society;**

   (e) Equality of opportunity; Disabled persons do not participate in the planning process on an equal basis with those without a Disability. The Australian and NSW Government fails to provide planning applications in 'Braille' to allow those with a visual Disability to have '**Effective Participation**' in the planning process. The obvious health problems from wind turbines on ALL groups in society make it even more important that the vulnerable members of society are allowed to have an effective participation. There are no special procedures put in place in Australia to allow those with a Disability to address the Planning Committee on particular applications.

   a) **Article 3** will be violated by a failure to 'effective participation' by the authorities failing to provide the application in 'Braille' to allow those with a visual impairment to participate in the process.

2) **Article 10 – Right to Life**: If the person with a Disability had walking difficulties, or was unable to walk, they would be at a substantial disadvantage to someone without a Disability from the on-going health and other issue's from wind turbines. They would not be able to simply 'get out' for the day due to their Disability or they may suffer from a mental health Disability and do not know or understand that they are in danger from wind turbines. The Australian and NSW Government are failing to

acknowledge or accept the mounting medical evidence against wind turbines and are exposing the most vulnerable members of society to long term health problems from wind turbines.

3) **Article 11** – **Situations of Risk** –Governments shall take, in accordance with their obligations under International law, including International Humanitarian law and International Human Rights law, all necessary measures to ensure the protection and safety of persons with Disabilities in situations of risk…This can be interpreted as including '**protection and safety of persons from Government policies if they are a threat to the life and health of a person with a Disability**' under the terms of International Human Rights law.

4) **Article 12** – **Equal recognition before the law –** (3) State parties shall take appropriate measures to provide access by persons with Disabilities to the support they may require in exercising their legal capacity. This includes free legal representation whilst exercising their rights and protection from 'undue influence' from Government.

5) **Article 13 -Access to Justice** – This includes all legal proceedings, at investigative and preliminary stages as direct or indirect participants.

6) **Article 15** – **Freedom from torture or cruel, inhuman or degrading treatment –** The World Health Organisation has stated that '**Sleep Deprivation**' is a form of torture. There is a mountain of information that clearly shows that wind turbines cause '**Sleep Deprivation**' in every sited area throughout Australia.

   a) **Article 15** will be violated when any wind turbine causes the complainant to have an interruption to their sleep for prolonged periods in the same night. The World Health Organisation has stated that noise above 30db in a bedroom will cause '**Sleep Deprivation**'.

7) **Article 16 – Freedom from exploitation –** The definition of 'exploitation' is "**to take advantage of (a person, situation, etc) esp unethically or unjustly for one's own ends**". The Australian and NSW Government has failed to provide a planning application in 'Braille' that would allow the visually impaired to participate in the planning process. This would be self-evident in the number of objectors or supporters of a planning application from the visually impaired currently on record. The Australian and NSW Government has already confirmed that they have no record of any planning objections from the visually impaired and that they are unaware of planning applications being available in 'Braille'.

   a) **Article 16** would be violated as those with a visual impairment are prohibited from being included in the planning process.

   b) **Article 16(2)** states that "State Parties shall also take all appropriate measures to prevent all forms of exploitation……. State Parties have allowed the Energy Companies to make planning applications for wind turbines knowing that those with a visual impairment would be excluded from participating. The Australian and NSW Government are complicit in the exploitation of the visually impaired and thereby in violation of the aforementioned Article.

   c) **Article 16(3)** states "In order to prevent the occurrence of all forms of exploitation, violence and abuse, State Parties shall ensure that all facilities and programmes designed to serve persons with disabilities are effectively monitored by Independent Authorities". The Australian and NSW Government have no such regime in operation and are in violation of the aforementioned Article.

d) **Article 16(5)** states "State Parties shall put in place effective legislation and policies, including women - and child focussed legislation and policies, to ensure that instances of exploitation, violence and abuse against persons with disabilities are identified, investigated and, where appropriate, prosecuted." No such legislation or policy decisions have been put in place by the Australian and NSW Government that prevents cases of 'exploitation' of the visually impaired by the planning system. In addition, there have been no prosecutions for violations by the United Kingdom planning system. The Australian Government are in violation and, complicit in continued violations, of the aforementioned Article.

8) **Article 17 – Protecting the Integrity of the Person –** states "Every person with disabilities has a right to respect for his or her physical or mental integrity on an equal basis with others." A person with learning difficulties will be subjected to additional and exacerbated health problems from wind turbines. The person with learning difficulties will not have the mental capacity to participate in the planning process to object, as no provisions are made for such an occurrence by the Australian and NSW Government. In addition, the Australian and NSW Government has a legal obligation to protect the most vulnerable in society and a failure to act is a violation of the aforementioned Article.

9) **Article 21- Freedom of expression and opinion, and access to information –** states "State parties shall take all appropriate measures to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice, as defined in Article 2 of the present Convention, including by:

a) Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost;

b) Accepting and facilitating the use of sign language, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions.

c) Urging private entities that provide services to the general public, including through the Internet, to provide information and services in accessible and useable formats for persons with disabilities.

d) The current planning process in Australia and NSW violates the aforementioned Article as any planning application is only in a single format and does not take into consideration persons with a disability. Those who are visually impaired are unable to scrutinise the planning application in Braille and does not conform to the Convention principles.

10) **Article 22 – Respect for Privacy –** states "No person with disabilities, regardless of place of residence or living arrangements, shall be subject to arbitrary or unlawful interference with his or her privacy, family, home or correspondence or other types of communication or to unlawful attacks on his or her honour and reputation. Persons with disabilities have the right to protection of the law against such interference or attacks." The Australian and NSW Government are in violation of this Article as the planning system does not make special provisions for the participation of persons with disabilities. The granting of planning consent for wind turbines is unlawful due to the failure of persons with disabilities participating in the planning process. This is also a violation of privacy, family and home of people with

disabilities due to the unlawful granting of planning consent due to the planning application only being presented in a single format and does not take into consideration those with a visual impairment.

I request that you acknowledge receipt of my complaint.

Yours sincerely

Patina Schneider
On behalf of Holly Schneider

APPENDIX 2

PEER REVIEW OF

ACOUSTIC ASSESSMENT FLYERS CREEK WIND FARM

S. COOPER – THE ACOUSTIC GROUP

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

APPENDIX 3

REVIEW

NOISE IMPACT ASSESSMENT

PREPARED FOR

FLYERS CREEK WIND FARM

BY

L. HUSON & ASSOCIATES PTY LTD

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

L HUSON & ASSOCIATES

REVIEW

NOISE IMPACT ASSESSMENT PREPARED BY AURECON for FLYERS CREEK WIND FARM

CLIENT:

FLYERS CREEK WIND TURBINE AWARENESS GROUP INC.

Job No LHA322
November 2011

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EXECUTIVE SUMMARY

L Huson & Associates Pty Ltd has completed a preliminary review of the acoustic aspects of the Flyers Creek wind farm development proposal submitted by AURECON on behalf of Flyers Creek Wind Farm Pty Ltd in May 2011.

The review focuses on the sound emissions of the proposed wind turbines, the modelling used to predict sound levels in the community and the methods used to determine target noise compliance curves.

The documents detail background survey data that we believe is inaccurate and non-compliant with the requirements of the South Australian Wind Farm Noise Guidelines and the directions of the NSW DECC. There is insufficient detail to show what data was deemed to be removed from the analyses and no detail on the effects caused by the reported equipment failures.

The noise modelling described is at best unintentionally confusing. Incorrect parameters were input to the CONCAWE noise model and the results of this were used to justify the use of ISO9613 for the results presented to assess compliance.

Contradictory noise model accuracies are presented and the lower used to feign an approach of conservatism. Despite the vagaries of the noise predictions the results show non-compliance in idealised conditions for the wind farm for a number of dwellings.

The reports suggest that the wind farm should be built and then managed to reduce any non-compliant noise emissions. The management options include facilities available to the example wind turbine used in the study, which it is stated is not the preferred choice for the development. We believe that this approach is inappropriate and that for the project to be approved there should be a clear conservative margin of compliance in the assessment methodology and results.

Prepared by

W Les Huson BSc(Hons) MSc CPhys MInstP MIoA MAAS MEIANZ

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INTRODUCTION

L Huson & Associates Pty Ltd has been commissioned by Flyers Creek Wind Turbine Awareness Group Inc. to review the acoustic aspects of the Flyers Creek wind farm development proposal submitted by AURECON on behalf of Flyers Creek Wind Farm Pty Ltd in May 2011.

This review focuses on the sound emissions of the proposed wind turbines, the modelling used to predict sound levels in the community and the methods used to determine target noise compliance curves.

CHOICE OF WIND TURBINE

The turbines chosen for the study are the GE 2.5xl unit. This can have a hub height of between 75m and 100m and has a blade sweep diameter of 100m. The study says that this is a representative unit to use for the assessment at Flyers Hill. This turbine has a gearbox driving the generator in the nacelle. The GE website at www.ge-energy.com/products_and_services/products/wind_turbines/ states that the 2.5MW series has the "Best sound profile in its class while maintaining a high energy yield".

A simple observation is that this unit has been chosen to be representative of the type of unit being considered for the project, yet it has the 'Best sound profile in its class'. This begs the question of the unit being truly representative of the available turbines since it is apparently 'the best'.

COMMUNICATIONS FROM RELEVANT AUTHORITIES

The DECC has strongly recommended the use of the adopted Noise Assessment Guideline for Wind Energy Facilities (SA EPA 2003) but notes 'the incorporation of compliance assessment procedures in the draft 2008 version of these guidelines'. The letter from the DECC setting out their requirements is dated 8 January 2009, before the 2009 version update was released for the SA wind farm guideline. It would appear that the basis for the noise impact assessment should be the 2003 version of the SA Wind Farm guidelines.

BACKGROUND NOISE REPORT APPENDIX G1

The following comments are based upon interpreting the noise assessment in accordance with the SA 2003 Wind Farm Guidelines and the 2009 version. The Vipac background noise report dated 7 June 2010 has implemented the 2009 version for the measurements but has prepared the

background noise trend curves using 10m AGL wind speed as required by the 2003 SA Wind Farm Guideline.

The SA wind Farm Guidelines 2003 and 2009 require determination of wind speed across each microphone used in the background study. This requirement is emphasised by DECC yet it appears that only two rainfall detectors and three wind speed and direction weather stations were used for the five monitoring sites. Obviously, the two background sites not having local wind speed measurements are non-compliant with the measurement requirements. Rainfall was only measured at two of the five background sites.

The Vipac report refers to wind screen manufacturers data, yet does not correct for wind speed at the microphone in accordance with the SA Wind Farm Guidelines, where manufacturer's data is used to correct the measured sound level. Rather, the simplistic approach of discarding data where the local wind speed exceeds 5m/s is used to remove invalid data (as provisioned in the guidelines when there is no manufacturer's data for the windscreens used). It is not clear from the reports if the 90th percentile wind speed was used to be the limit to discard noise data as required by the SA guideline. It would be acceptable to use an average wind speed as an alternative.

Rainfall at the two background monitoring sites (27 and 89) has been used to remove rain affected data at all 5 sites if those sites were within the locality of the rainfall meters. Rainfall can be localised so it would be better to have a rainfall meter at each monitoring site. Background sound level data at locations 12 and 25 have not been measured for local wind speed at the microphone in accordance with the guidelines or DECC directions.

It was noted that equipment failure occurred multiple times at locations 78 and 89, however, the total data excluded in table 5.1 of the Appendix G1 report lists only data removed due to rain or wind. There would be significant amounts of data removed due to equipment failure. For example, if the equipment at the end of a survey period will not calibrate successfully then one would suspect all of the data in that survey. Presumably, this would mean that only the last surveys at location 78 (4th to 17th December 2009) and location 89 (10th to 24th December 2009) would be valid. Appendix C of the background noise report does not show the continuous sound level data for location 78. All the data for location 89 is presented even though it is stated that there was equipment failures.

Background noise curves at four of the five background monitoring sites have been applied to other residences using an educated guess procedure. A better approach would be to apply the lowest noise curve obtained from the four monitored sites as a conservative measure for all other residences. Alternatively, take measurements at those residences.

The measurement location chosen for background surveys is loosely prescribed in the SA Wind Farm Guidelines. The only fixed requirement is that the monitoring location should be at least 5 m from any reflecting surface, other than the ground. In this regard, the measurement *locations* are compliant.

The regression analysis curve for location 89 is suspicious. The continuous noise data at this location shows the instrument noise floor to be approximately 30 dB(A) using the first

instrument to 4 December 2009, then the noise floor reduces to below 20 dB(A), then the noise floor for the last instrument used from 10 December 2009 appears to be around 24 dB(A). The manufacturers of the ARL316 used in the latter part of the survey at location 89 and the first part of the survey at location 78 state the operating range (range over which sound level can be measured in compliance with the appropriate Australian Standard for sound level meters) is a minimum of 30 dB(A). Data below 30dB(A) using this type of equipment at location 89 and 79 will be suspect and outside the approved measurement range for the instrument. The use of this particular instrument has been criticised on other wind farm assessments over the past two years.

The SA wind farm guideline states that "The lower limit of the instrument measurement range must be chosen to provide accurate measurements which might be limited by the noise floor of the data acquisition device." Given that sound levels below 20 dB(A) have been recorded at location 89 using alternative instrumentation, the use of the ARL316 having a minimum certified measurement range to 30 dB(A) is inappropriate. The absence of wind data from 16 November 2009 to 25 November 2009 at location 89 is of concern since it is in this period that high sound levels occurred. The wind speed at the site measurement tower has exceeded 20m/s during this period, yet no wind data is recorded at location 89. We suspect that there has been a malfunction of the wind speed sensor during this time and that the sound levels reported are suspect. Data from this period has been included in the trend analysis. At the very least, background measurements for location 89 should be repeated with suitable instrumentation.

The trend analysis chosen is a third order polynomial, eg. $Y = x^3 + x^2 + x + C$. A third order polynomial gives two inflexions in the trend curve. The assessment of wind turbine sound power measurements ISO61400-11 stipulates the use of second order polynomial trend curves. The reason why the third order polynomial fits the data better than a second order polynomial is because there is marked clipping near the noise floors of the instruments used. A better approach would be to use integer bin wind speed averaging; however, this approach is not described in the SA Wind Farm Guidelines. We note that the SA guidelines (2009) state that the correlation coefficients are to be stated for each order from linear to third order. Only the third order has been provided in the background noise report.

The background noise report states that only one met mast was used to produce all of the noise trend curves. It would be more accurate to use met mast at turbine location 17 for background survey locations 12 and 78 and to use met mast data nearest turbine location 4 for background measurements at locations 25, 27 and 89. The objective of the background trend curve is to determine wind at the *nearest* wind turbines to the monitoring locations and to trend this data against background sound levels. The analysis should be repeated for measurement locations 25, 27 and 89 using data from the northernmost met mast.

General Electric has advised that they are working on a solution to a tone emitted from their 2.5xl wind turbine. Accordingly, this model will not, after all, be considered for this project and another turbine is likely to be used. Why did they not choose another representative turbine? Part of the impact assessment states that compliance can only be achieved at some dwellings if lower noise emission operating modes of the wind turbine, that is a feature of this particular model, are implemented. We question if any of the other alternatives have similar lower noise emission operating modes.

NOISE PREDICTIONS

APPENDIX G2 AND CHAPTER 12 MAIN REPORT

Noise predictions used the SoundPlan software suite. This software package includes a number of sound propagation models and some of these models, such as CONCAWE, have been altered within the software implementation. This is stated for distances closer than 200m in the SoundPlan literature but apart from this variation we can only *assume* that the SoundPlan implementation is true to the original. A comment on the variations from a noise model is required by the SA guidelines and none has been provided in the Vipac reports.

The noise models used have a suggested accuracy in Chapter 12 of +/- 2 dB(A). There are a number of properties that would exceed the suggested noise limits that were derived from the background sound surveys. Whilst we have detailed scepticism over the appropriateness of the background survey data it remains that the suggested compliance margins are often less than 2 dB(A). The report simply states that to address this issue the predicted sound levels will be increased by 2 dB(A) where the target noise levels are already 2 dB(A) or more higher than predicted. This has no material effect on compliance, however, if the accuracy of up to +/- 5dB(A) is used, as stated in the Vipac report section 6.2 of Appendix G2 Model Accuracy, then non-compliance would result.

For the situation where the suggested error margin of +/- 2 dB(A) is less than the margin between predicted and derived compliance levels then this situation could cause an exceedance of the SA Wind Farm Guidelines. However, the proponent asks us to believe that in these circumstances they will ensure compliance with the SA guidelines. This is a leap of faith and there has been no demonstration of compliance in the report. The assessment is certainly not conservative, especially since the Vipac report in Appendix G2 states that the accuracy of the noise model is worse than +/- 2dB(A).

Despite reference to CONCAWE in the reports, Vipac have used the ISO 9613 algorithm for all of the noise modelling results. The statement that 'The model was run for the worst case wind conditions for the range of wind speeds from 3m/s to 12m/s' is puzzling because the ISO 9613 algorithm does not include wind speed or direction. CONCAWE does include weather categories but ISO 9613 does not. The ISO 9613 standard is considered valid only up to wind speeds of about 3m/s. The discussion of the noise model in part 6 of Appendix G2 states that CONCAWE was used with only partially reflective ground factor (G=0.7) when the SA wind farm guideline stipulates that a ground factor of G=0 should be used. The atmospheric conditions stipulated in the SA guidelines to be used for modelling of 10 degrees Celsius and 80% relative humidity is not referred to in the Vipac reports. It is stated in the Vipac report that the ISO 9613 results were used because they were higher than the CONCAWE results. This needs to be demonstrated with the use of appropriate conditions set in the SA guidelines for the CONCAWE noise model, rather than using alternative ground absorption values. The title for table 6.2 in Appendix G2 could be misleading since ISO 9613 does not include wind speed or

direction so the reference to wind speed only relates to the sound power from the wind generator and 'Meteorological Conditions G=0.0' is actually a value for ground absorption.

Even with the use of questionable noise modelling, there are exceedances of target noise limits that require special noise reduction operating modes for some turbines. It is still proposed that these be built and that the level of actual noise reduction needed be determined from the compliance testing. We find this approach inappropriate.

The last paragraph of section 6 Noise Model is a biased statement. The Senate enquiry report into wind farm noise acknowledges that there is no peer reviewed research to support the statements in the Vipac report about infrasound.

Section 6.2 of Appendix G2 states that the 95% accuracy of ISO 9613 is of the order of +/- 4dB(A) to +/- 5dB(A). This is contradictory to the model accuracy stated in Chapter 12 of the main report which uses +/- 2dB(A) as described earlier in this review. The fourth bullet point in section 6.2 of Appendix G2 can be used equally to justify higher noise levels than modelled and does not represent a conservative approach. No account has been made for the turbulence effects from upwind turbines that can increase noise emissions above those used for the modelling. It would be better to use CONCAWE as recommended by the SA guideline with the recommended input parameters. At least the CONCAWE model can account for higher wind speeds using Category 6.

The 'Noise sub plan' of the OEMP refers to situations in the event of non-compliance with noise limits derived in accordance with the SA guidelines. The compliance checks are to be conducted at the closest relevant receiver residences but these are not identified. The words allow for just two residences to be measured as a minimum. The text goes on to say that if complaints arise from 'more distant receivers' that these will be investigated. However, no compliance checks are offered for these residences. The difficulty in assessing compliance comes from the fact that background sound levels were not completed at each potentially exposed residence. Rather, only five monitoring locations have been used for all of the residences. The background surveys reported leave one to suspect the data collected and this makes any test of compliance problematic unless the surveys are repeated.

Reference is made to 'relevant residences' being those near the wind farm that do not have a financial interest through siting turbines on their property and 'non-relevant receivers' for those that have financial interests in the project. A further section of the community is called 'non-residential receivers outside the project area' which is a subset of the non-relevant receivers.

An outdoor target noise level from the wind farm for the non-relevant receivers is proposed at 45 dB(A). It is suggested that this is a sound level limit that will ensure no sleep disturbance in accordance with the World Health Organisation Community Noise Guidelines. Extracts from the WHO Guideline follow:

> ***10.4 Consideration of Vulnerable Groups***
> The evaluation of noise effects and related protective standards are virtually based on data from "normal", "average" people. They are usually adult

participants of investigations, selected as representative samples of the general population, or sometimes because of availability. However, people having less abilities and/or possibilities to cope with the impacts of noise exposure, and thus being at greater risk for harmful effects, might be underrepresented or insufficiently considered in noise protection necessities. Examples of vulnerable groups are: people with particular diseases or medical problems (e.g., high blood pressure), people in hospitals or in rehabilitation, people dealing with complex cognitive tasks, the blind, people with hearing impairment, babies and young children and elderly in general. For every noise protection guideline the issue of vulnerable subgroups of the population has to be considered. This is valid for types of effects (communication, recreation, etc.) as well as for places of exposure (home, workplace, public institutions, etc.).

10.6.3 Sleep Disturbance

Sleep disturbance due to continuous, as well as intermittent noise, has been demonstrated by electrophysiological and behavioral methods. The more intense the background noise is, the more disturbing is its effect on sleep. Measurable effects start from about 30 dB LAeq. Physiological sleep effects include changes in the pattern of sleep stages, especially a reduction in the proportion of REM-sleep. Subjective effects have also been identified such as difficulties in falling asleep, perceived sleep quality, and adverse after effects like reported headache and tiredness. The sensitive groups are believed to include mainly elderly persons, shift workers, persons who are especially vulnerable due to physical or mental disorders, and other individuals who have sleeping difficulties.

The probability that sleep will be disturbed by a particular noise depends on a number of factors including the interference criterion used (e.g., awakening or solely EEG changes), the stage of sleep, the time of night, the character of the noise exposure, and adaptation to the noise. Individual differences in sensitivity are pronounced. Although systematically collected field data on sleep disturbance are limited, there is some consensus of opinion that where noise exposure is continuous, the equivalent continuous sound pressure level indoors at night should not exceed approximately 30 dB LAeq if negative effects on sleep are to be avoided.

Low frequency noise, for example, from ventilation systems, can disturb rest and sleep even at low intensity. In the presence of a large proportion of low frequency sounds a still lower value than 30 dB LAeq would be needed. It should be noted that the adverse effect on sleep partly depends on the nature of the noise source.

Sleep disturbance increases with increased maximum sound pressure level. Even if the total equivalent continuous sound pressure level is fairly low, a small number of noise events with a high maximum level will affect sleep adversely. Therefore, guidelines for community noise to avoid sleep disturbance should be expressed not only in terms of equivalent sound pressure level but as maximum levels, and number of noise events during night, as well.

If the noise exposure is not continuous, the maximum sound pressure

> level is best correlated to sleep disturbances. Effects have been observed at individual exposures of 45 dB LAmax, or even less. It is especially important to limit the noise events exceeding 45 dB LAmax especially where the background sound pressure level is low; in fact, to protect sensitive persons a still lower guideline value would be preferred.
> Measures reducing disturbance during the first part of the night can be predicted to be most cost effective. In the first place, efforts should be made to reduce the sound pressure level of noise maxima and the number of noise events before focusing on reducing the equivalent level.
> Sleep disturbance is the critical effect in bedrooms, in dwellings and preschools. Recommended guideline values inside bedrooms are 30 dB LAeq for steady-state continuous noise, and for a noise event 45 dB LAmax, preferably even lower, about 40 dB LAmax. Lower sound pressure levels may be annoying depending on the nature of the noise source. The maximum level should be measured with the instrument set at ”fast”.
> At nighttime outdoors, sound pressure levels should not exceed 45 dB LAeq, so that people may sleep with bedroom windows open. This value has been obtained by assuming that the reduction from outside to inside with the window open is 15 dB; note that the actual reduction may be less in some cases, maybe only 5-7 dB, which then would mean that the sound pressure level outdoors needs to be kept at or below 35-37 dB LAeq.
>
> ***10.7 Summary***
> **…..**Inside bedrooms the sound pressure level should not exceed 30 dB LAeq for steady-state continuous noise, and for a noise event not exceed 45 dB LAmax, preferably even lower (maybe 40 dB LAmax). Still lower levels may be annoying depending on the nature of the noise source. At nighttime, sound pressure levels outdoors should not exceed 45 dB LAeq, so that people may sleep with bedroom windows open. Even lower levels may be required pending the design of the window opening, maybe 35-37 dB LAeq outdoors.

It is important to note that the use of a 45 dB(A) target outside noise level will not be adequate to protect sleep if the attenuation of sound from outside a home to inside a bedroom is less than 15 dB(A). From measurements we have completed recently, the best attenuation achieved for bedrooms with open windows in three different typical Australian weather board properties on farms was at most 5 dB(A) and was more typically 3 dB(A).

It is doubtful if the seven ‘wind-farmers’ or non-relevant receivers that are located within 1 km of the turbines know or understand what sound levels they will be exposed to at night in the summer months with windows open. The internal sound levels predicted will not protect sleep if the attenuation of sound from outdoors to a bedroom is only 3 dB(A) with windows open.

APPENDIX 4

AERIAL AGRICULTURAL ASSOCIATION

OF AUSTRALIA

WIND FARM AND POWER LINES

POLICIES

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

Aerial Agricultural Association of Australia

Windfarm Policy

March 2011

Introduction

Windfarms and their pre-construction wind monitoring towers are a direct threat to aviation safety – and especially aerial application. They also pose an economic threat to the industry where the costs of windfarm development—including those of compensation for loss of income—are externalized onto other sectors such as aerial application.

AAAA has developed this policy so as to inform regulators, asset developers and operators alike of the need for action on their part to fulfill their duty of care to Australia's aerial applicators.

AAAA Windfarm Policy

As a result of the overwhelming safety and economic impact of windfarms and supporting infrastructure on the sector, AAAA **opposes all windfarm developments** in areas of agricultural production or elevated bushfire risk.

In other areas, AAAA is also opposed to windfarm developments unless the developer is able to clearly demonstrate they have:

1. consulted honestly and in detail with local aerial application operators
2. sought and received an independent aerial application expert opinion on the safety and economic impacts of the proposed development
3. clearly and fairly identified that there will be no short or long term impact on the aerial application industry from either safety or economic perspectives and
4. if there is an identified impact on local aerial application operators, provided a legally binding agreement for compensation over a fair period of years for loss of income to the aerial operators affected.
5. Adequately marked any wind infrastructure and advised pilots of its presence .

AAAA believes that the above processes should also apply for all windfarms that have already been approved or erected, especially the establishment of long-term (for the life of the windfarm or until it is removed, whichever is the longest) binding compensation arrangements for affected aerial application companies.

While it is not AAAA policy to provide specific comment on particular development proposals due to resource limitations, AAAA notes that windfarms can have far-reaching footprints that can remove significant amounts of land from treatment for a considerable distance from the windfarm boundary.

Operational implications of each development will vary enormously depending on the site, the positioning of the turbines, orientation of affected paddocks relative to the turbines, the type of aerial application taking place, the aircraft used, the pilot's experience, the meteorological conditions, the site elevation, the position of any airstrip relative to the turbines and a range of other variables.

However, it is clearly unacceptable that one industry can impose significant safety threats on another, longer established industry with impunity.

AAAA believes that:

- All wind monitoring towers—including guy wires—must be clearly marked to assist pilots to see them
- All wind turbines, wind monitoring towers and associated infrastructure must be required to be removed when no longer in use. A mandatory bond should be levied on all developments to ensure the site can be remediated.

Recommendations to Government

Moratorium & National Policy
AAAA recommends to all Governments the establishment of a moratorium on windfarm developments until a national COAG policy on windfarms is established that requires the following to be considered before approval:

- Competing land uses for the particular site.
- Priority for existing long-term land-uses.
- Economic and safety impacts on contracting industries such as aerial application, including the broader implications for thresholds of sustainability for contractors.
- Independent life cycle analysis of windfarms and their overall environmental impact.
- Impact on aviation safety.
- Impact on bushfire preparedness and aerial firefighting.
- Impact on visual pollution / amenity/ tourism.
- Other sources of sustainable energy.

Transparency
AAAA recommends that any 'special' or 'fast-track' planning processes established for windfarm developments be removed. All windfarm developments should be subject to the full planning processes and community consultation in each State and Territory, including appeal of decisions.

Governments should require public disclosure on a register of payments to landholders made before approval of the windfarm. This will allow other landholders and contractors to be aware of developments.

Aviation Safety
AAAA recommends that government provide better information to all windfarm developers on their responsibilities for aviation safety, including raising the duty of care requirements established under *Sheather v Country Energy* (NSW Court of Appeals) for owners of assets that pose a known threat to aviation activities to provide for suitable marking and other safety initiatives.

The Commonwealth should establish a head of power to consider and regulate windfarm developments to protect aviation safety. This should include mandatory marking and notification of wind infrastructure and the power to veto proposed developments where they interfere with aviation safety.

CASA should set a much lower than previously used height trigger for notification of tall structure developments - down to 50 feet in an area of known aerial application activity—or by using a risk assessment based approach.

CASA should work with Airservices Australia and any other relevant agencies to ensure that completed windfarms are included on suitable aviation mapping including WAC charts and topographic maps.

CASA should develop a national tall structures web database that is accessible in real time by all low-level aviation pilots and which captures all wind-monitoring towers as well as completed windfarms. The database should also capture other tall structures such as radio masts etc.

Background

CASA does not have a clear head of power or a pathway for windfarm developers to ensure the risks their developments are posing are appropriately managed so as to protect legitimate activities of low-level aviation operators.

In particular, previous CASA efforts to address this issue by requiring marking and lighting of certain towers above a certain height and within a certain distance of an airport misses the main risk to aviation and this is the wind monitoring towers as they are frequently lower than the height trigger, but still a threat to legitimate low-level aviation.

Wind monitoring towers are very tall in relation to aerial application operations, are erected within very short timeframes, are extremely difficult for any pilot to identify from the aircraft and are often not notified to aviation users because of the lack of a Government-mandated notification system and the desire of the developers to keep their positions a secret because of commercial issues.

There are two quite distinct issues arising from windfarms that affect aerial application:

- safety of the aircraft and pilot and
- economic impact on aerial applicators.

Safety Impacts

AAAA's view is that the case of *Sheather v Country Energy* (NSW Court of Appeals) clearly established that anyone with infrastructure posing a threat to aviation must consider the risks that infrastructure poses to aviation safety and respond appropriately through marking or other measures to safeguard aviation operations.

This precedent is of critical relevance to windfarm developers although not apparently widely known to them or acted upon.

Economic Impacts

Safety is not the only consideration that is imposing additional risk and consequences on the aerial application industry.

The placement of wind farms in areas of highly productive agricultural land is leading to reductions in treatment areas of aerial application companies with no compensation for this externalization of costs by wind farm developers.

For example, placement of a wind farm may affect flight lines and application height or even whether the application can be conducted at all - leading directly to either an increase in cost or a reduction in income - and sometimes both - for aerial application operators.

As windfarm developments increase in number and scale of footprints, the threshold of non-viability of aerial application in an area may be reached where it is simply not economic to base an aircraft there. In a highly seasonal industry such as aerial application, operations may already be close to this threshold and windfarm footprints may compromise the availability of a critical service.

The need to manage spray applications to ensure they are safe may mean that pest outbreaks such as locusts may not be able to be effectively controlled. Windfarms may create significant gaps in large scale treatment plans—leading to a breakdown of an overall campaign against locusts, cereal rust, noxious weeds or other pests with massive economic implications for farmers and the economy.

In particular, AAAA is concerned that not enough consideration is being given through the State planning approval processes to the impacts of windfarms on productive agricultural land and the aerial application industry, remembering that it may not only be the land footprint where the windfarm is sited, but also land surrounding that for some kilometers where aircraft may have to maneuver to conduct aerial application.

At the very least, windfarm developers should be required to pay compensation to aerial applicators where it can be reasonably established that there will be an economic impact imposed on the aerial application company by the wind farm developer.

Operational Impacts

The following potential impacts on aerial application should be considered by all windfarm developers:

- positioning of wind farms may affect local aerial application operations, depending on the particular site.
- impacts could vary from affecting flight lines to treatment height and accuracy, maneuvering areas and possibly take-off and landing splays if an airfield is nearby (see for example, CASA CAAP 92-1 for agricultural airstrips – www.casa.gov.au – search for CAAP 92-1.)
- it may not be the land or farm that the wind farm is to be situated on that will be affected. Neigbouring farms, especially any with borders close to the windfarm site, may suffer significant impacts by imposed limits on the manouvering areas of aerial application aircraft.
- a key impact may not be the turbines themselves, but the positioning of any powerline that would lead from the windfarm substation back to the grid, or any other above ground powerline that would be put in to support the development. Any sections of above ground cable should be adequately marked.
- economic impacts could include increased costs due to longer flight times required to manouver heavily laden aircraft around wind towers, a loss of accuracy due to being required to fly higher for safety reasons, an increase in liability due to the reduction in accuracy, or the complete loss of application jobs due to the landholder not wanting the area covered by windfarms to be treated.

AAAA Activities to date

AAAA has done a lot of work to make it easier to mark guy wires and powerlines – including on wind monitoring towers – through amendment of the national standard on marking of wires so as to use a marker developed by Country Energy (NSW) with the cooperation of AAAA.

There is now little practical reason why wind towers and especially wind monitoring towers should not to be clearly marked.

In addition, AAAA has attempted to provide relevant information to developers through the Wind Energy Association, but this process/ advice is voluntary and consequently will not provide coverage of all developers.

AAAA also passes on information to members that has been provided to it by wind farm developers on the physical location of wind monitoring towers. However, only a few developers provide this information and again there is little doubt that many towers are going up unmarked and unknown until hopefully spotted by pilots during pre-application inspections.

More comprehensive safeguards must include a mandatory national system of communication of the position of all wind monitoring towers and the inclusion of this on a national database accessible by low level pilots.

This is a very real issue for topdressing and firebombing operations - as wind monitoring increases, so does the threat to legal aviation activities.

AAAA Windfarm Notification Process

AAAA tries to assist aviation safety by advising those of our members on our email lists of the position of wind monitoring towers and also wind turbines when they are under construction and finally constructed, if advised by windfarm developers.

Windfarm developers are encouraged to provide these details (in lats and longs by email to AAAA) so that AAAA can pass them on to those members.

AAAA provides this facility on the basis of it being information of a general nature only and the understanding that the information, for a range of reasons (including email failure, not all members being covered by email, or non-use by members, or operational shortcomings) will not provide any guarantees of aviation safety.

AERIAL AGRICULTURAL ASSOCIATION OF AUSTRALIA

FURTHER INFORMATION

If you would like more information on the vital and responsible role the aerial application industry plays:

www.aerialag.com.au

Or contact us on:
02 6241 2100 ph.

phil@aerialag.com.au

AAAA
PO BOX 353
Mitchell ACT 2911

Aerial Agricultural Association of Australia

Powerlines Policy

March 2011

Introduction

Powerlines present a threat to legal low-level aviation including aerial application—one that has caused the majority of aerial application accidents and the deaths of many pilots.

AAAA has developed this policy so as to inform regulators, asset developers and operators alike of the need for action on their part to fulfill their duty of care to Australia's aerial applicators.

AAAA Powerlines Policy

AAAA recommends:

- **The Commonwealth mandate a powerline safety program for all owners and operators of powerlines that would minimize the risks to legitimate low-level aviation and which would feature:**
- **The mandatory marking of powerlines in areas of aerial application and firebombing activity**
- **A national web-based database and mapping system, accessible by pilots, that would accurately identify the position of all powerlines and relevant infrastructure.**
- **The placement either underground, or aligned with paddock boundaries or road easements, of all new powerlines and powerlines being repaired in areas of aerial application and firebombing activity.**
- **Electricity network owners and operators should not be able to refuse the aerial agricultural industry permission to operate around powerlines, including flying under them where appropriate, as this is often the safer option.**
- **Electricity network owners and operators should be required by legislation to consult with landholders and aerial operators when proposing to construct a new powerline in farming areas, and to pay compensation to the farmer where this results in increased costs of aerial application as a result of forcing changes to flight paths.**
- If unable to put powerlines underground, electricity network owners and operators should be required to mark powerlines in farming areas so as to make them more easily identifiable to pilots..

Background

Most agricultural land in Australia is criss-crossed with powerlines and aerial application companies and pilots put enormous effort into managing these hazards safely, generally using a risk identification, assessment and management process in line with Australian Standard AS4360/ISO 30000.

The agricultural pilot curriculum mandated by CASA includes training for the safe management of powerlines and AAAA has been active in providing ongoing professional development for application pilots that includes a focus on planning, risk management and a knowledge of human factors relevant to managing powerlines in a low-level aviation environment.

AAAA runs a specific training course for aerial application pilots entitled *'Wire Risk Management'* to address these issues.

Every aerial application mission is planned to take account of the threat of powerlines and to manage then as safely as possible while still applying the essential chemicals to protect the crop.

In terms of due diligence, the aerial application industry is doing everything it can to reduce the risk of hitting powerlines.

This is in stark comparison to the very lax, on occasions hostile attitude of powerline companies to the threat their powerlines pose to aviation operations being conducted legally and under the regulation of CASA.

In some cases, the powerline companies' ongoing refusal to provide to aerial application companies the detailed mapping of the position of their network or to mark their wires to make them easier to see, is negligent.

Certainly, the courts (*Sheather v Country Energy*, NSW Court of Appeals) have found that powerline companies do owe a duty of care to all pilots and should mark their powerlines where they are an obvious threat to aviation safety.

AAAA has worked very successfully with one powerline company with coverage of most of NSW - Country Energy - on the development of a cheap and simple powerline marker that can help pilots keep visual contact with the position of powerlines in and around treatment areas.

Unfortunately, these markers are not used in other States, although AAAA notes that Ergon Energy, with coverage of much of Queensland, has recently introduced the same markers and this may improve safety, although take-up rates are still very low.

AAAA's was involved in the Australian Standards Committee for the review of AS 3891 - Marking of Cables and their Supporting Structures.

Unfortunately, it was not possible to secure a significantly improved approach to the marking of powerlines, especially in relation to low level aviation and lowering any thresholds for the mandatory marking of powerlines, such as long spans across valleys etc that have previously caused fatalities. However, a useful risk management approach was included in the standard to encourage landowners to consider the marking of wires in areas of known low level aviation activity. The key aim of the review was achieved however, and that was to permit the markers developed by Country Energy to be use legitimately under the Australian Standard which previously had no provision for them.

Agricultural areas and areas of probable bushfire activity would be two obvious places where powerline companies should be exercising their court-defined duty of care and marking powerlines so as to assist aerial agricultural and fire-bombing pilots manage another risk in an already hostile aviation environment.

FURTHER INFORMATION

If you would like more information on the vital and responsible role the aerial application industry plays:

www.aerialag.com.au

Or contact us on:
02 6241 2100 ph.

phil@aerialag.com.au

AAAA
PO BOX 353
Mitchell ACT 2911

APPENDIX 5

CAITHNESS WIND FARM

INFORMATION FORUM

SUMMARY OF WIND TURBINE ACCIDENT DATA

TO 30 SEPTEMBER 2011

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

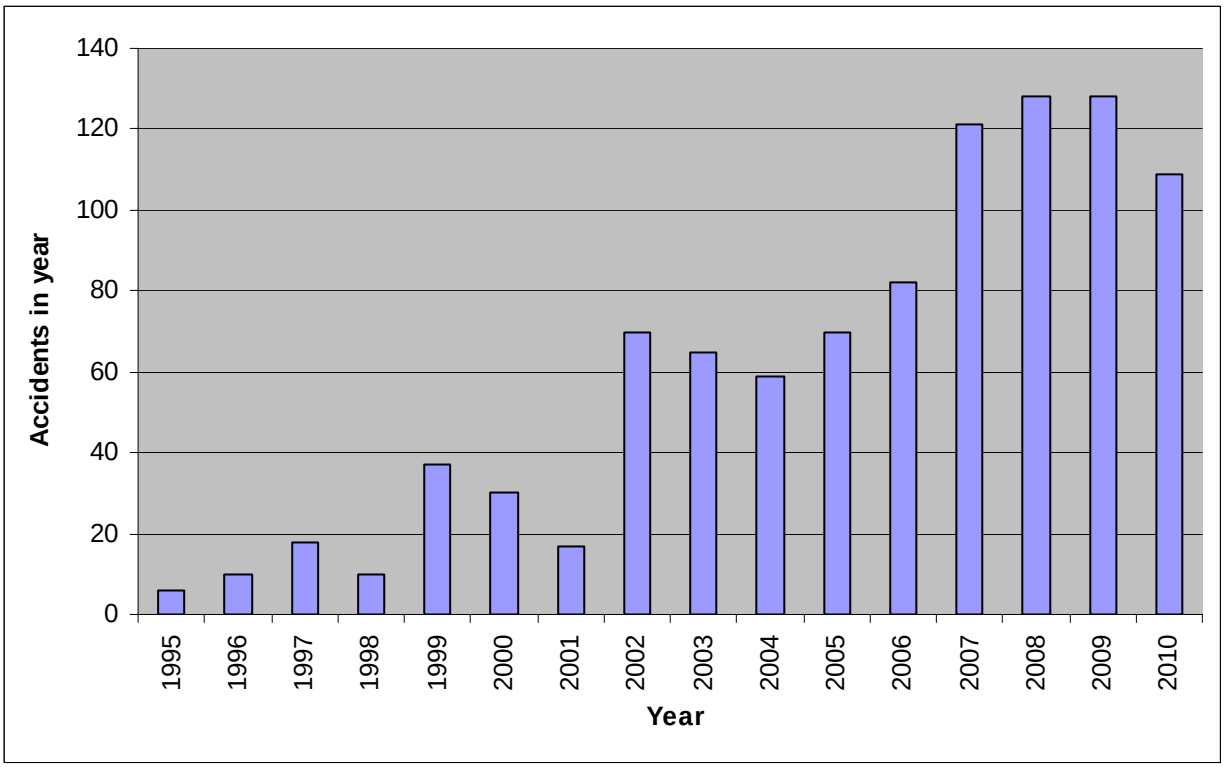
Summary of Wind Turbine Accident data to 30 September 2011

These accident statistics are copyright Caithness Windfarm Information Forum 2011. The data may be used or referred to by groups or individuals, provided that the source (Caithness Windfarm Information Forum) is acknowledged and our URL www.caithnesswindfarms.co.uk quoted at the same time. Caithness Windfarm Information Forum is not responsible for the accuracy of Third Party material or references.

The accompanying detailed table includes all documented cases of wind turbine related accidents which could be found and confirmed through press reports or official information releases up to 30 September 2011. CWIF believe that this compendium of accident information may be the most comprehensive available anywhere.

Data in the detailed table attached is by no means fully comprehensive – CWIF believe that it may only be the "tip of the iceberg" in terms of numbers of accidents and their frequency. However, the data gives an excellent cross-section of the types of accidents which can and do occur, and their consequences. With few exceptions, before about 1997 only data on fatal accidents has been found.

The trend is as expected – as more turbines are built, more accidents occur. Numbers of recorded accidents reflect this, with an average of 16 accidents per year from 1995-99 inclusive; 48 accidents per year from 2000-04 inclusive, and 106 accidents per year from 2005-10 inclusive.



This general trend upward in accident numbers is predicted to continue to escalate unless HSE make some significant changes – in particular to protect the public by declaring a minimum safe distance between new turbine developments and occupied housing and buildings (typically around 2km in Europe), and declaring "no-go" areas to the public, following the 500m exclusion zone around operational turbines imposed in France.

Some countries are finally accepting that industrial wind turbines can pose a significant public safety risk. In New Zealand, the government is set to change planning rules to give residents the right to veto wind turbines from being built within 2km of their homes. And in Canada, the Ontario Government has declared a moratorium on offshore wind projects and has proposed a reduction of noise from wind turbines from 40dB to 30-32dB, which would effectively extend the setback distance from homes.

Detailed data is presented chronologically. It can be broken down as follows:

Number of accidents

Total number of accidents: 1093

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.	1	9	17	81	30	17	70	65	59	70	82	121	128	128	109	106

** To 30 September 2011 only*

Fatal accidents

Number of fatal accidents: 80

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.	1	8	8	7	3		1	4	4	3	5	4	9	7	6	10

** To 30 September 2011 only*

Please note: **There are more fatalities than accidents as some accidents have caused multiple fatalities.**

Of the 88 fatalities:

- 63 were wind industry and direct support workers (construction, maintenance, engineers, etc), or small turbine owner /operators.
- 25 were public fatalities, including workers not directly dependent on the wind industry (e.g. transport workers).

Human injury

90 accidents regarding human injury are documented.

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.			2	3	4	1	2	2	2	6	10	14	15	8	12	9

** To 30 September 2011 only*

74 accidents involved wind industry or construction/maintenance workers, and a further 16 involved members of the public or workers not directly dependent on the wind industry (e.g. fire fighters, transport workers). Six of these injuries to members of the public were in the UK.

Blade failure

By far the biggest number of incidents found was due to blade failure. "Blade failure" can arise from a number of possible sources, and results in either whole blades or pieces of blade being thrown from the turbine. A total of 220 separate incidences were found:

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.			3	32	4	6	15	13	15	12	16	22	20	26	20	16

** To 30 September 2011 only*

Pieces of blade are documented as travelling up to 1300 meters. In Germany, blade pieces have gone through the roofs and walls of nearby buildings. This is why CWIF believe that there should be a minimum distance of at least 2km between turbines and occupied housing, in order to adequately address public safety and other issues including noise and shadow flicker.

Fire

Fire is the second most common accident cause in incidents found. Fire can arise from a number of sources – and some turbine types seem more prone to fire than others. A total of 164 fire incidents were found:

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.			1	5	3	2	24	17	15	14	12	21	17	16	9	8

** To 30 September 2011 only*

The biggest problem with turbine fires is that, because of the turbine height, the fire brigade can do little but watch it burn itself out. While this may be acceptable in reasonably still conditions, in a storm it means burning debris being scattered over a wide area, with obvious consequences. In dry weather there is obviously a wider-area fire risk, especially for those constructed in or close to forest areas and/or close to housing. Two fire accidents have badly burned wind industry workers.

Structural failure

From the data obtained, this is the third most common accident cause, with 118 instances found. "Structural failure" is assumed to be major component failure under conditions which components should be designed to withstand. This mainly concerns storm damage to turbines and tower collapse. However, poor quality control, lack of maintenance and component failure can also be responsible.

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.		1	1	13	9	3	9	7	4	7	9	13	9	16	9	8

** To 30 September 2011 only*

While structural failure is far more damaging (and more expensive) than blade failure, the accident consequences and risks to human health are most likely lower, as risks are confined to within a relatively short distance from the turbine. However, as smaller turbines are now being placed on and around buildings including schools, the accident frequency is expected to rise.

Ice throw

31 incidences of ice throw were found. Some are multiple incidents. These are listed here unless they have caused human injury, in which case they are included under "human injury" above.

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.				9			2	2	4	4	3		3	4		

** To 30 September 2011 only*

Ice throw has been reported to 140m. Some Canadian turbine sites have warning signs posted asking people to stay at least 305m from turbines during icy conditions.

These are indeed only a very small fraction of actual incidences – a report* published in 2003 reported 880 icing events between 1990 and 2003 in Germany alone. 33% of these were in the lowlands and on the coastline.

** ("A Statistical Evaluation of Icing Failures in Germany's '250 MW Wind' Programme – Update 2003, M Durstwitz, BOREAS VI 9-11 April 2003 Pyhätunturi, Finland.)*

Additionally one report listed for 2005 includes 94 separate incidences of ice throw and two reports from 2006 include a further 27 such incidences.

Transport

There have been 92 reported accidents – including a 45m turbine section ramming through a house while being transported, a transporter knocking a utility pole through a restaurant, and a turbine section falling off in a tunnel. Transport fatalities and human injuries are included separately. Most accidents involve turbine sections falling from transporters, though turbine sections have also been lost at sea, along with a £50M barge.

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.							4		3	6	6	19	10	11	11	22

** To 30 September 2011 only*

Environmental damage (including bird deaths)

97 cases of environmental damage have been reported – the majority since 2007. This is perhaps due to a change in legislation or new reporting requirement. All involved damage to the site itself, or reported damage to or death of wildlife. 39 instances reported here include confirmed deaths of protected species of bird. Deaths, however, are known to be far higher. At the Altamont Pass windfarm alone, 2400 protected golden eagles have been killed in 20 years, and about 10,000 protected raptors (Dr Smallwood, 2004). In Germany, 32 protected white tailed eagles were found dead, killed by wind turbines (Brandenburg State records). In Australia, 22 critically endangered Tasmanian eagles were killed by a single windfarm (Woolnorth). Further detailed information can be found at: www.iberica2000.org/Es/Articulo.asp?Id=3071
and at: www.iberica2000.org/Es/Articulo.asp?Id=1875

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.			1			1	1	7	1	6	5	10	21	13	19	12

** To 30 September 2011 only*

Other (miscellaneous)

201 miscellaneous accidents are also present in the data. Component failure has been reported here if there has been no consequential structural damage. Also included are lack of maintenance, electrical failure (not led to fire or electrocution), etc. Construction and construction support accidents are also included, also lightning strikes when a strike has not resulted in blade damage or fire. A separate 1996 report** quotes 393 reports of lightning strikes from 1992 to 1995 in Germany alone, 124 of those direct to the turbine, the rest are to electrical distribution network.

*** (Data from WMEP database: taken from report "External Conditions for Wind Turbine Operation – Results from the German '250 MW Wind' Programme", M Durstewitz, et al, European Union Wind Energy Conference, Goeteborg, May 20-24, 1996)*

By year:

Year	70s	80s	90-94	95-99	00	01	02	03	04	05	06	07	08	09	10	11*
No.			1	12	7	4	12	13	11	12	16	18	24	27	23	21

** To 30 September 2011 only*

Caithness Windfarm Information Forum
30 September 2011

APPENDIX 2

REPORT

DECOMMISSIONING &

WASTE MANAGEMENT

by

JOHN SCHNEIDER

THE CENTER OF WASTE MANAGEMENT

ABU DHABI

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

DECOMMISSIONING

What happens to the wind tower when it becomes obsolete or otherwise uneconomical to operate?

If the tower is no longer generating income for the landowner, it becomes a nuisance for normal farming operations and should be removed.

Does the agreement/contract between the developer and the landowner specify how soon the tower and other structures, including access roads will be removed and who will be responsible for the cost? The removal cost will be substantial. Is the owner/operator of the facility responsible for removal?

Public Service Commissions in the US have made administrative rulings dealing with decommissioning of wind turbines since 2008 and have placed the responsibility for removing wind turbines and related facilities when no longer useful on the owner or operator of the commercial wind energy conversion facility. The Commissions have ordered a bond or other financial assurances that will fully cover the costs of dismantling and decommissioning of these wind energy facilities.

It is sincerely recommended that landowners and Government must insist that decommissioning costs be covered by cash bonds held by independent third parties because many wind farm "owners" turn out to be limited liability companies (LLC's) with few assets. Because tax breaks for wind are heavily front-loaded (depreciation 5 to 6 years; production tax credit – 10 years), there are huge incentives for sales of facilities after tax breaks are used, or for abandonment if costs of maintenance, repair and/or replacement rise substantially. There is little protection for landowners or even the community if surety bonds that rely on premium payments or cash bonds held by an LLC owner – in case of insolvency or abandonment.

Decommissioning and abandonment are specialized activities that require meticulous planning and the best use of technology equipment and resources to control costs, ensure safety at the worksite and protect the environment, as well as cause minimal disruption for the community at large. Very little information is provided by the developer in its submission regarding decommissioning of the wind turbines and associated activities, which gives rise for concern at the long term objectives of the company Infigen and its motives.

Hazardous Materials and Waste Management:

Substantial amounts of solid and industrial wastes would be generated during the decommissioning and dismantling of the wind energy facility. Much of the solid material could be recycled and sold as scrap however, the remaining non hazardous waste would be sent to permitted disposal facilities.

Industrial wastes (lubricating oils, hydraulic fluids, battery electrolytes, dielectric fluids, coolants, solvents, purging solutions and cleaning agents) would be treated similarly to maintenance wastes during operations (put in containers, characterized and labeled, possibly stored briefly and transported

by a licensed service provider to an appropriate permitted offsite disposal facility). Severe impacts could result if these wastes were not properly handled and were released to the environment.

There are numerous cases in the US that have identified the shortcomings of any decommissioning plans that have been submitted; all suggesting initially that the scrap value will more than cover the costs of dismantling and decommissioning wind turbine facilities. Unfortunately the wind farm industry is not yet old enough to have any real data to sufficiently identify and validate the costs. A good examples is identified as follows:

Tom Hewson from Energy Ventures Analysis ("EVA") was hired by the citizen's group, Mountain Communities for Responsible Energy, to evaluate a decommissioning cost report prepared for the Beech Ridge Energy Project – a 124 turbine project proposed for Greenbrier County, West Virginia.

The project wind developer Invenergy had argued that the scrap value of the wind turbines would far exceed the cost to decommission the wind project and thus, bonding only US$2,500 per turbine that would slowly escalate to US$25,000 per turbine by year 16 would be more than adequate.

The applicants consultant estimated that its salvage value credit would reach US$12.64 million (US$101,900/turbine) in their decommissioning fund study based upon application of general scrap factors and prices. This scrap value credit would more than offset their estimated demolition costs (US$8.68 million; US$70,000/turbine).

EVA completed an independent assessment of the salvage value of Beech Ridge Wind turbines by first contacting the major regional scrap yards directly and obtaining current scrap prices for steel, copper and transport. From these data, EVA developed a Beech Ridge project specific salvage credit estimate of only US$ 2.63 million i.e., US$10.01 million less than the original applicants study. They also uncovered several major flaws in the applicant study, methodology and pricing. The developer not only used old scrap prices but failed to take into account costs related to transporting scrap to a yard. In addition, to obtain the posted scrap price they would need to break down the tower into 1 metre lengths otherwise the quoted price would be significantly less.

In addition, the copper materials must also have their insulation stripped and/or copper pieces separated to obtain their posted copper price. If not, their scrap value would be far less than the common posted price. Given the large drop in scrap prices in recent years (>40%), EVA found that scrap value would no longer cover decommissioning costs.

Several other projects were compared and found that the costs to decommission wind turbines were severely underestimated by more than 50%, by not taking into account crane rental rates, assuming low earthmoving costs and assuming high productivity rates (6 turbines/day).

The bottom line is that even if the permitting agency allow the salvage credit, the total net cost of decommissioning the Beech Ridge project would be US$10.4 million (US$83,900/turbine). EVA's analysis quantified the large scrap price and demolition cost escalation risk being assumed by the local community.

To protect the community, the permitting agency should require a bond of a minimum US$100,000 per turbine to capture true demolition cost escalation risk. It is up to the wind developer to convince the bonding company of the high salvage value, then they should be able to negotiate a lower rate for the bond.

"THE RISK SHOULD STAY WITH THE DEVELOPER AND THE BONDING COMPANY .....AND NOT THE COMMUNITY".

(Links to this report BeechRidgeEnergyDecommissioning.pdf)

DECOMMISSIONING ESTIMATES:

(Based on an independent decommissioning assessment prepared by LVI Environmental Services for the Stony Creek Wind Farm Project – Town of Orangeville, Wyoming County, New York). The project is of a similar size to the Flyers Creek Wind Farm project.

Turbine Equipment Removal

Remove Blades/Hub (2 days)					
Sr.	**Item**	**Quantity**	**Unit**	**Unit Cost $**	**Extended**
1.	Supervision	16	hours	75.00	1,200.00
2.	Crane with operator	2	day	2,400.00	4,800.00
3.	Operators	32	hour	40.00	1,280.00
4.	Labour	32	hour	30.00	960.00
5.	Support Equipment	2	day	3,000.00	6,000.00
6.	Consumables/Fuel	16	hours	200.00	3,200.00
7.	C & D Waste Disposal	25	tonne	50.00	1,250.00
8.	Steel Salvage	0	tonne	(150.00)	0.00
9.	Aluminum Cable Salvage	0	Kilogram	(1.00)	0.00
10.	Copper Cable Salvage	0	Kilogram	(3.00)	0.00
11.	Component Salvage	0	each	0.00	0.00
				Sub Total	18,690.00

Remove Nacelle (1 day)					
Sr.	**Item**	**Quantity**	**Unit**	**Unit Cost $**	**Extended**
1.	Supervision	8	hours	75.00	600.00
2.	Crane with operator	1	day	2,400.00	2,400.00
3.	Operators	16	hour	40.00	640.00
4.	Labour	8	hour	30.00	240.00
5.	Support Equipment	1	day	3,000.00	3,000.00
6.	Consumables/Fuel	8	hours	200.00	1,600.00
7.	Waste Handling/Disposal (oils)	0	tonne	allow	1,000.00
8.	Steel Salvage	0	tonne	(150.00)	0.00
9.	Aluminum Cable Salvage	75	Kilogram	(1.00)	(75.00)
10.	Copper Cable Salvage	25	Kilogram	(3.00)	(75.00)
11.	Component Salvage	0	each	0.00	0.00
				Sub Total	9,330.00

Dismantle Tower (10 days)					
Sr.	**Item**	**Quantity**	**Unit**	**Unit Cost $**	**Extended**
1.	Supervision	0	hours	75.00	6,000.00
2.	Crane with operator	10	day	2,400.00	24,000.00
3.	Operators	160	hour	40.00	6,400.00
4.	Labour	160	hour	30.00	4,800.00
5.	Support Equipment	10	day	3,000.00	30,000.00
6.	Consumables/Fuel	80	hours	200.00	16,000.00
7.	C & D Waste Disposal	0	tonne	77.00	0.00
8.	Steel Salvage	138	tonne	(150.00)	(20,700.00)
9.	Aluminum Cable Salvage	235	Kilogram	(1.00)	(235.00)
10.	Copper Cable Salvage	65	Kilogram	(3.00)	(195.00)
11.	Component Salvage	0	each		0.00
				Sub Total	66,070.00

Foundation Removal to 1 metre below surface (2 days)					
Sr.	**Item**	**Quantity**	**Unit**	**Unit Cost $**	**Extended**
1.	Supervision	16	hours	75.00	1,200.00
2.	Crane with operator	0	day	2,400.00	0.00
3.	Operators	32	hour	40.00	1,280.00
4.	Labour	0	hour	30.00	0.00
5.	Support Equipment	2	day	3,000.00	3,000.00
6.	Consumables/Fuel	16	hours	200.00	3,200.00
7.	Concrete/Clean Fill	44	tonne	100.00	4,400.00
8.	Steel Salvage	1	tonne	150.00	(150.00)
9.	Aluminum Cable Salvage	0	Kilogram	(1.00)	0.00
10.	Copper Cable Salvage	0	Kilogram	(3.00)	0.00
11.	Component Salvage	0	each	0.00	0.00
				Sub Total	12,930.00

Backfill Restoration (1 day)					
Sr.	**Item**	**Quantity**	**Unit**	**Unit Cost $**	**Extended**
1.	Supervision	8	hours	75.00	600.00
2.	Crane with operator	0	day	2,400.00	0.00
3.	Operators	16	Hour	40.00	640.00
4.	Labour	16	Hour	30.00	480.00
5.	Support Equipment	1	day	3,000.00	3,000.00
6.	Consumables/Fuel	8	hours	200.00	720.00
7.	Topsoil	30	cbm	30.00	900.00
8.	Reseed Vegetation	400	Sq.m	2.00	800.00
9.	Aluminum Cable Salvage	0	Kilogram	0.00	0.00
10.	Copper Cable Salvage	0	Kilogram	0.00	0.00
11.	Component Salvage	0	each	0.00	0.00
				Sub Total	7,140.00

Remove Blades/Hub	18,690.00
Remove Nacelle	9,330.00
Dismantle Tower	66,070.00
Foundation Removal	12,930.00
Backfill Restoration	7,140.00
Total Per Tower/Turbine	95,488.69
Number of Towers/Turbines	44
Total for Towers/Turbines	**$ 4,201,502.36**

** Scrap prices vary frequently and cannot be accepted as a reliable factor.

DECOMMISSIONING BOND:

To ensure funds are available to the Blayney Shire Council to cover costs of decommissioning, Flyers Creek Wind Farm developers should post a surety bond or equivalent financial security instrument that would be in place on or before the date thirty (30) days after the commencement of pouring of concrete for the first wind turbine foundation, and would be in place for the life of the project. The security would be renewed by FCWF annually, or another schedule agreed to by the Blayney Shire Council and the Flyers Creek Wind Farm developers.

The amount of the financial security should be at least $100,000 per turbine based on the figures demonstrated above, and as referenced to the requirements in the United States of America. Terms of the security should include:

- Designation of Blayney Shire Council as beneficiary;
- Terms under which funds would be dispersed;

- A provision that Blayney Shire Council could draw 50% of the funds if FCWF does not renew the security instrument prior to its expiration date; and
- An escalating factor to ensure that the full costs are covered when decommissioning occurs and/or abandonment of the project.

Every three years an independent engineering firm agreed to by both parties, will review the nett decommissioning costs in a report to the Shire Council. Any adjustment to the security value recommended by the engineer's report would be in place within ninety (90) days of delivery of the report to the Blayney Shire Council.

CONCLUSION:

This report has been prepared by me as an affected resident of the proposed Flyers Creek Wind Farm development, and in my capacity as a professional waste and contracts management specialist with over 30 years of experience. The opinions expressed in this report are my own and have been researched carefully by me to ensure clarity and perspective. It is hoped that the NSW Government will also share my opinion and take extreme caution in dealing with this application by Infigen, for an outdated and otherwise ineffective method of renewable energy.

John Schneider
Head of Contracts
The Center of waste Management – Abu Dhabi

References:

BeechRidgeEnergyDecommissioning.pdf
www.wind-watch.org/..wind-decommissioning
invenergyllc.com/stonycreek/
Comfrey Wind Energy
Wind Farm Decommissioning – David Burraston
NSW Legislative Council 5.128 Decommissioning

WASTE MANAGEMENT:

Producers of waste have a **"Duty of Care"** to ensure that waste is properly managed. There are various types of waste produced on the wind farm site including:

Construction Stage - clearing the site of debris including trees, shrubs, and possibly other types of farm waste. Concrete and rubble generated during the construction of the towers and foundations.

Operation Stage – maintenance of the turbines will require oils for lubrication as well as hydraulic fluids, and the storage of materials on the site.

Decommissioning Stage – it is assumed that most wind turbines and substation components will be reused, recycled, or sold as scrap. Oils and other fluids that may be considered hazardous should be handled and disposed of according to waste management regulations.

There needs to be a clear waste management plan that identifies the wastes that will be generated on the site during the various stages listed above. The plan should identify the nearest disposal facilities and the type and quantity of waste that will be disposed of at these facilities. Hazardous wastes should be handled with the utmost care.

Other considerations should include:

- Waste minimization and a "just in time" procurement policy to encourage minimal storage of goods on site;
- Separation of waste at source to maximize opportunities for reuse and recycling;
- Appropriate storage and disposal;
- Environmental Management Systems (EMS) should be demonstrated by all major contractors on site and satisfactory audit of systems carried out;
- Management of domestic waste, domestic refuse and sewage; and
- Management of concrete waste and oils with appropriate bunding and reference to the Environmental Management Plan and Pollution Prevention Plan.

It is critical to minimize negative impacts on the environment, therefore plans for management and disposal of infrastructure removed from the site will favour reuse and recycling of materials where possible, and should follow best practices for waste disposal .

APPENDIX 7

HEALTH HISTORIES OF

WIND TURBINE EFFECTED PEOPLE

Flyers Creek Wind Turbine Awareness Group Inc
PO Box 135 Millthorpe NSW 279

Thursday, 15 December 2011

RE:- WIND FARMS IN THE BAROSSA, MID-MURRAY EASTERN MT LOFTY RANGES

This is a copy of the letter I sent to the Editor of the Leader Newspaper (our local paper) a few weeks ago. There is a very serious problem developing everywhere these wind turbines are being placed, and are proposed to be placed, and I would very much like to know your position in regard to wind farms in South Australia.
The majority of people living in this area chose a lifestyle to get away from this sort of Industrialisation and are feeling, distressed, depressed and deeply concerned that their lifestyles will be heavily impacted by this proposal by Pacific Hydro and there has already been evidence that property prices are plummeting.

To the Editor

In regard to the proposed "Wind Farm" for the Barossa's Eastern Ranges one must take every possible fact into account, not just the soft, feel good, "green" sell coming from the wind farm and power companies.
These companies have the money to convince people that they are a good thing. When we dig deeper we find that historically the efficiency of these so called wind farms is in question, re: bang for buck, and that the division they cause in local communities is greatly underestimated.

People need to make informed decisions. But I guess that's pretty hard when you are a farmer out there in the ranges and you are being offered $10,000 per wind tower per year, and may have 10 or more towers on your property. If you were offered these staggering amounts of money for the rest of your life would you be able to say no?
I don't think so. Here lies the dilemma and the source of the community division. It is anything but equitable for one landowner to be offered a veritable wind fall while his neighbour gets nothing but the sight of these ugly towers, a blight on the landscape forever.

Most of the state's 33 per cent renewable energy by 2020 target is being driven by fast-tracked multi-million dollar wind farms in regional areas.
More wind power is generated here than any other Australian state or territory with 13 operational wind farms, and our recently retires Premier Mike Rann also foreshadowed changes to the Pastoral Act to open up 400,000sq km of Crown Land for solar and wind farms. **Which may in all honesty be a better option.**
Keep them away from our communities!

As of December 2010, South Australia has thirteen operational wind farms, with an installed capacity of 1,018 MW. South Australia has half of the nation's installed wind capacity, despite only making up 8% of Australia's population. A further 184 MW of projects are under construction. It is estimated that wind power provided 14% of South Australia's energy demand in 2008/09.

However, in the recent heat wave in early February, SA wind farms supplied 49 MWh to the 3499 MWh required to sustain SA's citizens through the worst part of the day. That is less

than 1.5%. We spend squillions of dollars on something that makes no difference to our energy supply, and must be backed up by fossil-fuelled generators when they don't perform which is most of the time.

They are possibly the worst piece of public policy ever devised and there are no winners apart from the rent-seeking corporations that own them.

People are worried about the economic impact of such projects on existing set-ups. The Clare and Gilbert Valley Council is talking to Planning SA about securing its wine-making and tourism potential under landscape protection provisions included in the draft Mid North Regional Land Use Framework and our Barossa Council should be following suit. **Tourists from all over the world come to see our beautiful unspoiled countryside, not to look at Ugly Industrial Wind Towers which are inappropriately situated, simply for easy access to existing electricity towers.**

These towers may not be that effective at power generation but they raise the bottom line really nicely for those whose otherwise unproductive farms they adorn. It seems as if the greedy power companies are trying to be really green (even if in reality they generate more in tax incentives than they do electricity).

A New Scientist article a few years ago suggested that the figures quoted for these wind turbines simply don't add up. The real whole-of-life costs, both environmental and financial, exceed the gains. Unless and until this situation is rectified, these wind farms remain little more than a government feel-good (look-good) exercise at our expense.
The truth is, and publicly available electricity industry records show, that wind generators are worthless when power demand is at its highest. On hot summer days they can only be counted on to produce less than 5% of their rated capacity.

Wind power is expensive and these companies are only spending money to build wind farms because of Mike Rann's idea that there must be a certain percentage of "renewable" energy. To cover the cost of these expensive ventures, electricity companies jack up the price of electricity for you and me. They even state this in their requests to the government to increase electricity prices. It gets better though, because each time a wind farm is built, the electricity grid needs to be modified to handle it and yep, that cost also gets passed on to you and me.

The cost is not just dollars. If you read carefully the people are saying the full cycle cost in terms of materials and energy consumption of manufacture, installation, maintenance and disposal is greater than they produce during their lifetime. That is, over their lifetime they do not produce power at all, they consume it. This is the legacy we are leaving our children, a net loss. If this is incorrect, why do NONE of the bodies involved produce detailed full cycle costs to refute it?

The rush to wind power in SA may be self-limiting, at least in the short term. Accessing the national grid is getting harder and the latest infrastructure report by Engineers Australia says congestion is already a problem. Networks in the Mid-North and South-East are already struggling to cope and – not unlike a traffic jam of electricity signals – the lines clog up when the wind blows.

Finally, with the introduction of Protection Zones for the Barossa Valley and McLaren Vale areas it is <u>utterly baffling</u> why wind farms have been just recently added by state legislation to be compliant on our beautiful Hills Face Zones. This is in direct opposition to what the whole Bill is about. Protecting our Hills Face Zones from Industrial complexes, which must obviously EXCLUDE wind farms. There can be nothing more detrimental to these precious areas than what is essentially an industrial complex of enormous proportions. Surely, it is an oxymoron to completely spoil our timeless landscapes to create 'GREEN ENERGY'.

The whole integrity of our Iconic and World Class Food and Wine Community is in very real danger of losing its Heritage value forever. Will we just become another wind farm area?

We must all fight to put a stop to these ugly monsters ruining our beautiful landscapes and tearing our communities apart once and for all.
Wind farms should be just that. **A farm, in a designated area, away from our communities, with a 10km exclusion zone.**

No more Community division.
No more Wind Farm Syndrome Health Issues.
No more ruination of our beautiful, timeless landscapes.

C Connors
Angaston

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7th February 2011

It is with great distress that we write to the Senate Inquiry regarding the noise levels at our property generated by Acciona's wind farm. We have resided at Quoin Hill for almost 28 years, after moving from Melbourne to start a life in the country with our young family. We have built up a small family business from scratch at great cost and with 'blood, sweat and tears'.

From the very beginning we were supportive of the Waubra Wind Farm, and were quite excited about the proposed benefits to Waubra and the local communities. When we were approached we made it quite clear that our only concern was noise. However, time and time again we were told that "there was no way that we would hear them", even after the preliminary noise tests were taken, we were advised that a proposed turbine some 400 mtrs away would only be 1dBA over the limit, and we would **still** not hear it. Since they have been commissioned this is a completely different story.

The closest turbine to our house is some 600metres away, (5 turbines located within 1km of our house, 13 turbines within 1.5 kms and 30 turbines within 2kms). The turbines on Big Hill (to the north of our house) also have an affect, which are within a 1.5km to 2km range.

The type of sound that we experience depends on the wind direction; it ranges from the 'doof doof' noise (sub woofer noise you hear when a party is going on down the street at night) to a constant 'jet rumble'. We can also hear the generator noise (like when a fridge fires up) and at times a 'whoosh' noise (like swinging a stick quickly through the air). These noises are not just for a minute or two, but can go on all night, not to mention the day.

On average we would say that we have interrupted sleep at least 3-4 nights a week, on some occasions up to 5 nights. As stated before, this has been since they have been commissioned. We have tried to escape from the continuous noise by relocating to 1 of the 4 bedrooms in the house, but only to be awakened by noise from other turbines. This continuous interruption to, and lack of sleep has had an enormous impact on our lives, our business and our future.

We met with Acciona in April 2010 to raise our concerns, only to be advised that the noise levels were compliant. We have been monitoring the noise levels with our own decibel monitor since March 2010 and have found the readings at times, to be far in

excess of the permit conditions. We have grave concerns about the accuracy and integrity of the monitoring carried out by Marshall Day and strongly urge an investigation of the entire process be carried out. We continue to monitor and have rung the Acciona complaints phone line on numerous occasions, with little or no response at all.

It has come to our attention, albeit years down the track, that our property title details have been listed on the planning permit (unknown to us at the time), hence suggesting that we are Stakeholders, and even though a request has been made in writing (15th Feb 2010) to have us removed, this has still not happened. We firmly believe now, that our property and house were central to the Waubra Wind Farm project and we have been misled from the beginning about the noise affect. We have since been advised by a neighbour (a stakeholder with turbines), that at the start of the project Wind Power stated, “Quoin Hill could have had a very negative impact on the project if not kept on side”.

We had a meeting with the Pyrenees Shire Mayor, David Clark, in August 2010 to raise our concerns re the wind farm, and were advised that following the last Shire Revaluation all properties within the Waubra Wind Farm had decreased in value, which was confirmed on receipt of our last shire rate notice. A neighbour has also advised us that a shire employee recommended challenging the valuation, as they believe the actual valuation to be still lower.

We welcome a visit to our property to see the situation that we are in, first hand.

Yours sincerely
Stephen Coleman

STATEMENT – WAUBRA DISTRICT RESIDENTS, VICTORIA

(9 signatures at end of statement)

Received by Dr. C. Watts 14/12/2011

Introduction

Evansford is a tiny village - more a scatter of houses and farms, 10 kilometres to the North of Waubra. The 'Waubra Wind Farm' commenced full operation in June 2009. The 128 1.5 MW turbines each approximately 120 metres high, sprawls over 173 sq kilometres, extending to within 2 kilometres of Evansford. There are no shops, churches, hotels - not even a post box - in Evansford. There are no major roads and very little traffic. The closest 'villages' are all 10 - 15 kilometres away. It is a mix of remnant bush, state forest and farm land on a rolling landscape. Mount Beckworth, Mount Bolton and grand rocky outcrops including a spectacular granite ridge are all part of the district's distinctive features. There are two reservoirs, many farm dams and creeks. What had been noticeable was the lack of sound and visual pollution. Huge night skies, bright with stars, black as. Infinite silence. Most of us live here, because we have chosen a quieter lifestyle, a lifestyle more in tune with nature. Most of us grow our own vegetables and fruit, and engage in sustainable living practices. We did not originally object to the Waubra Wind Farm. We are not opposed to renewable energy.

We all live in, or within close proximity to, the Waubra Wind Farm. The closest turbines to our homes and workplaces range from approximately 1 kilometre to over three. Although one neighbour who is also affected has a turbine 53 metres from their boundary fence, whilst others have turbines under a kilometre from their homes and workplaces. We have experienced what it is to live with a windfarm for over two and half years now, and it is all aspects of this experience that we relate, albeit in an abridged version, in the following. We submit this because we do not want other people to experience what we have and are experiencing.

Some background

For many who live within the wind farm, and have turbines on several sides of their homes and workplaces, most wind directions subject them to what some have said is closer to a 'living hell'. For some people, living and working within a kilometre or so, they hear not only the aerodynamic noise, but the pulse of the whoosh, whoosh, and the creaking and grinding of the mechanics. So loud and sudden they say it startles them. For those of us a few

kilometres away, when the wind and weather conditions align, we now have a busy freeway or the roar of a constantly taking off jet and/or a low pulsing to live with. There are people who live over 5 kilometres away and hear or feel the noise from the turbines. They say it wakes them at night. Our next door neighbour, some days in his back paddock, 5 k's from the nearest turbines, receives what feels like the accumulated roar of 128 turbines. The noise does not depend only on distance, but the local terrain, with its valleys and hills, creates tunnels for wind and sound to be amplified and carried. You can walk around a property, or the district and in some places you can hear and feel the turbines very clearly and in others not at all.

Although it's not only 'noise' and how loud it is to the ear that is the problem. Indeed most of us would say that it is more about what you feel, perceive, in your body. It is about the vibration, which of course is a wave, a continuum of sound as a wave. So throughout this document I will talk of 'noise', in the entire sound spectrum, not only as what is audible to the ear but also as what is felt.

What also must be noted is that wind developers consistently state that the sound of the wind farm will be masked by the sound of wind in the vegetation. This is not true. Often there is wind at the height of the turbines but it is still at ground level. There are no rustling leaves to mask the sound of the turbines then! Other times you still can hear the distinctive sound of the turbines through the sound of wind in trees. And of course you can feel the pressure in your ears, head, chest cavity, at least, if not also experiencing any number of other physical effects. Other times you do not hear them at all, but that also depends on where you live.

<u>Adverse Health Events</u>

The following is an extract from a letter emailed to the Victorian Department of Health, tabled at a Wind Turbine and Health Forum on October 21, 2011:

People are continuing to experience health problems, some are the same, some changed, others intensified. Many of the people have been experiencing these problems for well over two years. Some of the health problems that people note, (not all are experienced exactly by everyone, and not everyone experiences all of them) since they first experienced them in 2009, are:

- *sleep deprivation, and all the attendant problems of not having sufficient refreshing sleep, especially after over two years.*

- *head pressure and more frequent headaches and often for greater duration.*
- *'yo-yo' blood pressure - very difficult to manage on medication.*
- *tachycardia*
- *ear pressure and earaches*
- *tinnitus. For some it is now constant. It can be a humming that can intensify to a low thunder or roar, or buzzing or high pitched ringing. This does vary.*
- *experiencing greater difficulty in discerning words in conversations where there is more than one conversation in a room;*
- *It has been noted that some people are speaking very loudly, without any awareness that the volume has been ramped up, or without any need for the volume to be increased. Family members have to ask them to speak more quietly.*
- *Many people have also noted that they have become very sensitive to sounds which they had not previously been aware of, such as: the refrigerator; air conditioning, heating units, low industrial hum. These sounds not only provide greater annoyance but also trigger on occasion quite intense physical responses.*
- *emotional fragility, volatility*
- *depression*
- *cognitive dysfunction, inability to think clearly, articulate, find words, complete sentences, etc. The ability to plan, organise and multitask has diminished. This is noted by people who have been doing this successfully all their lives and their livelihoods are partially dependent on their continuing ability to do so.*

In some further discussions, people have also observed an increase in occurrence of sinusitis, of catching colds and viruses, of gastrointestinal episodes. People have also noted aching joints and legs. All of the noted symptoms did not commence at the same time, but have gradually accreted.

One of the most serious problems is the level of exhaustion that people are operating with. Many are farmers who have to operate machinery. We all drive cars and have to work. Our capacity to think clearly, react appropriately, to work safely, has been severely impaired. Yes, we all know that we are not functioning with peak awareness and we have adapted our behaviour to accommodate this on a daily basis. However accommodating this behaviour is there is little leeway for the unforeseen, emergency or error. We have all had to adapt so

many aspects of the way we work, the way we live, to accommodate for the impacts on our health and well-being.

It continues to be noted by people that when they spend time away from the area their general health, sense of well being, mood, and behaviour, is very different to when they are at home and the turbines are operating. They do not experience the same symptoms and generally feel much healthier and happier. This was noted right from the beginning - that the symptoms occur when at home and the turbines operating but not when away from the area or when the turbines were not operating. The main difference now is that for some people some of the effects do not diminish immediately when they are not in the area. Although the longer they are away from the area, gradually the adverse health problems diminish. There is no doubt as we continue to live with the Waubra Wind Farm that we are concerned regarding the accumulative and long term effect of exposure.

<u>The proliferation of untested hypotheses regarding the cause or motivation of people's ill health.</u>

There are far too many assumptions about, and very little primary research into, affected people's reporting of adverse health from wind farms. These assumptions, opinions or untested hypothesis are proliferated by 'experts' who have not undertaken primary research. These '*Experts' have suggested that the adverse health effects people are experiencing are because they: are psychosomatic; hypochondriacs; feel disempowered, jealous, anxious and fearful about new technologies; are opposed to windfarms and are angry, annoyed and stresse; or the fear and negative publicity, makes them sick; are NIMBY's; are wanting compensation.* (Attached: From Senate Inquiry submission berni janssen) All of these hypotheses can be challenged rationally and simply, (see attached Senate Inquiry Submission berni janssen) and if primary research was undertaken with appropriate psychological and sociological tests, most of them would be found to be without basis.

Some 'experts' who have not undertaken any windfarm specific primary research to verify their opinions, state that we are suffering adverse health effects because of Dr Laurie and the Waubra Foundation. That perhaps we are suffering from hysterical contagion. It is obvious from the dates of our initial correspondence to government departments, media reports (Current Affair, 7.30 Report WIN News all in 2009) and many other very public documents that this assertion is completely untrue. These all date from mid to late 2009 and are well

before we knew of or had met Dr Laurie. We note this because these opinions are proliferating in the public realm, despite their being very clear evidence that this opinion has no factual basis, and are being repeated thoughtlessly and callously. This causes much distress and anxiety to people whose health and well being is already at such a low ebb.

Donald Thomas and berni m janssen (Attachment 1. berni's NHMRC presentation) presented their experiences at the NHMRC Wind Turbine Scientific Forum in June 2011. They were present all day. Most of the health professionals present had not undertaken any primary research into wind farms and health, including interviewing of affected people. Yet there were only one or two people who approached Donald, berni or any of the other affected people present to inquire, investigate, discover more. Even sitting next to people at the same table we were not quizzed or probed. Certainly no-one who thought we were jealous, technophobic, psychosomatic, hypochondriacs approached us to ascertain if their hypothesis were substantiated, or not.

Inquiry and investigation are the basis of science. Yet these health professionals did not take the opportunity to investigate. Why not? One would imagine that in the context of a scientific forum, scientific methodology and professionalism would be the presiding attitude and evident in unbiased, open inquiry. But no and why not? If one has an open agenda then investigation and inquiry is the norm. We understand that anecdotal evidence provides information on which research questions arte formulated, and are necessary to be gathered for a first step to be undertaken. It would seem that many present were not interested enough to take the first step in identifying what those questions might be.

<u>Why we believe these adverse health effects are related to the operation of the turbines.</u>

1. We had not experienced these adverse health effects prior to the operation of the WWF. (Of course we all had the occasional headaches, aches and pains, but not to the degree, specificity and repetition as experienced in the last two and a half years)
2. We began to experience some of these conditions around the commencement of the full operation of the WWF. Over time more adverse health effects have developed and others intensified. Initially we did not associate this with the operation of the wind farm.
3. Through conversations with our neighbours we discovered that they too had begun to experience similar adverse health effects at around the same time. The number of

people in a small locality who are experiencing similar adverse health effects would indicate that there is something in their environment that is affecting them. The most noticeable change in the environment is the Waubra WindFarm.

4. Over time, we began to note that many of us have similar experiences on the same day. EG 7 people have a blinding head ache on December 16 2009. Many of us would have either disrupted sleep or sound sleep on the same nights.
5. Of course we do not experience this every day and night. When we leave the area, or when the turbines are not operating, we find that the symptoms dissipate. When we are away from our home we sleep soundly and we do not experience these adverse health effects. Although now, it takes longer for the Adverse Health Effects to diminish.
6. Through research on the internet we discovered that these adverse health effects were being experienced by people living with wind farms, all over the world. The similarities are too consistent to be coincidental.

<u>Strategies to deal with the situation</u>

Some families locally have had to move out of their homes, even though they still have to work their land. The Dean's have not lived in their home where they raised their family for over two and a half years. The Stepnells, who had built their own home within the last ten years, have not lived there for nearly a year. Most recently Maggie and Andrew Reid have bought a house twenty-five minutes away, so they can have a place to sleep when the conditions become intolerable at the house they were building as the wind farm was being built. The home they cannot sleep in when the turbines are roaring, has all doors and windows double-glazed, walls, sub-floor and roof cavity insulated, the sort of hi-tech modifications used for noise and temperature insulation. There was a 1 kilometre setback in place at the time they were applying for a building permit and they sited their home appropriately. Rosa Dawes no longer sleeps at her farm and residence of over fifty years. Her daughter and herself sleep in Ballarat and return to work the farm. Another farmer leaves his home which has been in his family for generations when conditions make it impossible to have a sound night's sleep. He then goes to another property he owns to sleep. Several other families have just chosen to sell and move out of the area.

Other people are undertaking all sorts of strategies to alleviate the problems that have been forced on them. Some move from their usual bedroom to another room in the house. (Steve

Coleman Senate Inquiry Submission 321) Most of us now try to regularly go elsewhere - usually to the city - Melbourne to get a good night's sleep. What an extraordinary circumstance that country people are able to sleep more soundly in the city than in their own homes when the noise/vibration from the turbines is manifested.

Everyone was assured by the wind developers that they would not be affected "Modern turbines make minimal noise, so that there would be no problems." But as we and many people locally now know, this is far from the truth.

Local community

We also would like to note that we know of many people locally who have not spoken publicly about the ongoing disruption to their sleep or health problems they are experiencing. They speak privately to people we know. They are reluctant to do so in public. Many are reluctant to complain, are too scared to speak out because of family and/or community and/ or employment/economic connections. The fear of being ostracized, ridiculed, abused or threatened or just plain community disapproval, is a strong deterrent in a very small rural community. Some people just don't want to cause a ripple or be on the 'outer'.

Many of the people who have spoken out have been ridiculed, abused, threatened, had property damaged, been ostracized - regularly. Many of them no longer visit Waubra or participate in the clubs and associations that they were once very much a part of. (One example see Attachment: Enid Thomas Senate Inquiry Submission) The fractured community, the social disconnect, is also a contributing factor for many people's well-being and quality of life deteriorating.

Maggie Reid:

There are two turbines within a kilometre and twenty nine within three.
There are 3 issues – the physical, which is the noise = the truck that never comes = the lights, the sheer physicality of the thing just out the backdoor. Then there is the psychological damage that it has done to people around here – the people who are victimised and vilified because they do not have them and/or who don't think they are a good idea or agree with the landholders; the social division; the slander, lies and intimidation; the anxiety that is caused by the health problems whether they are real or imagined; again it is how dismissive the neighbours, authorities etc of the claims of people who have been affected – and then there is

just the total destruction of small communities – pitching one faction against one another; appearing to spread largesse when it is a farce; interference with the normal political processes in a small country town.

Acciona has bought at least 7 properties, 4 prior to the building of the turbines and 3 post-construction, that are public knowledge. There are rumours of more. Trish and Vic Godfrey's property, surrounded by 65 turbines, was bought by Acciona. Trish was very vocal and had a high media profile where she consistently spoke of the adverse health effects she was suffering, prior to the buy-out . Conditional to the purchase, the Godfrey's were required to sign a contract that contained a gag clause. Acciona in a media release after the purchase said they bought them out because of visual amenity.

<u>Complaints</u>

Complaints have been made to Acciona for over two and a half years, and there is still no resolution in sight to these ongoing, developing problems. All dealings with Acciona have been less than satisfactory. (Refer to Senate Inquiry submission - Gunther Wilhelm) Some cause of concern:

1. Complaints system.

Gunther requested a complaints reference number, and procedure in his initial complaints in June 2010. At that time he received Number 1. After several more complaints and reference numbers he asked if these were his own Record of complaint numbers and was told that the numbers were not person specific but for all people who complained. The Wind Farm had been operating since March 2009 and fully operational in June 2009. We know that there were many people who had complained repeatedly since 2009, many in person to the Waubra facility, many by phone and none were issued Complaint Reference Numbers, as is stated in and required by Operational (Stage 2) Environment Management Plan. Why was Number 1 only issued in June 2010, when it is obvious and known that there had been many earlier complaints? Surely any Complaints system should be independent? As locals have said ' you don't complain to the fox about the hens going missing'

2. Spin

Whilst what is said by wind developers might and could be true, often it is the information that is omitted that would provide a more complete picture of the situation and assist people's

knowledge, understanding and inform their decisions. The tendency with wind energy developers, as with any large-scale corporation, promotional material (websites, information kits, newsletters) provides an enhanced view of their operations and capabilities; it's the gloss and spin. Not that it is not true in the best possible world in the best possible circumstances, but certainly not always true in most other conditions, which as we know are more often than not. Sins of omission and obfuscation abound in their literature, letters and personal meetings.

3. Never meet a wind developers representative without witnesses.

The experience of people who have met with representatives is that the record of the meeting as provided by the representative nowhere matches their own recall of what occurred. This also had occurred with the Minutes of the Community Reference Group (see Gunther Wilhelm's Senate Inquiry Submission). And has occurred even in the local media(See Enid Thomas's Senate Inquiry submission). Distortion of what has occurred or what has been said at meetings or otherwise, by representatives of wind energy developers, is a regular occurrence and occurs at all levels. Hence, many people locally only meet with a representative with several people being present to witness what occurs.

4. Distortion of NHMRC public Statement.

In a private letter from Acciona they stated that he NHMRC Rapid Review had found no peer-reviewed scientific evidence to link wind turbines with ill health. There was no other information such as the recommendations attached.

Heather Bishop, Emerging Issues. NHMRC has stated in an email dated 31 march, 2011:

The NHMRC statement clearly says that because there is not enough robust scientific evidence available:

a precautionary approach should be taken

research outcomes should continue to be monitored;

wind turbine design standards should be complied with;

site evaluation should occur to minimise potential impacts; and

people who believe they are experiencing health problems should consult their Doctor promptly.

By omitting the recommendations contained in the Public Statement and only noting that 'NHMRC has confirmed that there is no published scientific evidence to support adverse health effects of wind turbines on health' distorts the Public Statement.

Warwick Anderson CEO, NMHRC also stated at the Senate Inquiry, from Perth transcript, 31 March 2011:

....but I do want to make a point to anybody who is relying on this (Rapid Review). We regard this as a work in progress. We certainly do not believe that this question has been settled. That is why we are keeping it under constant review. That is why we said in our review that we believe authorities must take a precautionary approach to this. That is what we do say in medicine anyhow, but this is very important here because of the very early stage of the scientific literature....
P 87 Professor Anderson

...The main thing I wanted to say is that, if there are ill effects, that is a very important thing for the NHMRC. We have not done something and walked away, we are keeping it under review and we would expect that as the literature matures and becomes more advanced and there are better studies that the possible ill effects will emerge strongly...
P 88 Prof Anderson

Prof Anderson—I know that the headline on that public statement says that, but the document does not say that. It did say that there was no published scientific evidence at that stage to positively link the two. That is a very different thing to saying that there are no ill effects and we do not say that there are no ill effects. We definitely do not say it that way....

It is very evident that Acciona has distorted the NHMRC Public Statement.

5. Compliance.

In October 2010 Acciona provided the *Waubra post-construction noise compliance report* as required under the conditions of the planning permit. On Dec 16 2010, in a private letter from the DPCD regarding that report " The advice from the EPA and the independent peer reviewer has raised a number of issues with the report including compliance with the relevant noise standard at several dwellings near the wind farm" Acciona was required to respond. As yet that *Report* has not been signed off by the Minister of Planning. Indeed, just recently (5 Dec 2011) in a private letter from Acciona, David Clarke wrote, "I advise that the Minister for Planning has requested that Acciona provide additional information to inform his determination of noise compliance at the Waubra Wind Farm, including information regarding the potential for Special Audible Characteristics.' Although repeatedly in public, in the media, in company literature, and in private meetings and in correspondence over the

past year Acciona claimed compliance at the Waubra Wind Farm. Yet another example of omission, obfuscation and distortion of the facts.

We have also complained formally and informally to:

- Pyrenees Shire
- Department of Planning and Community Development
- Department of Health
- EPA
- Worksafe
- Numerous Ministers and politicians, local, state and federal.

Repeatedly we have reported that we are experiencing adverse health problems since the commencement of the operation of the Waubra Wind Farm in 2009 and asked for independent research to be undertaken; for guidelines to be more rigorous; for setbacks to be increased; for greater transparency and accountability.

Conclusion.

We believe that our experience provides us with knowledge and insight that should be used to ensure that wind farms are appropriately sited so that the health and well being of individuals and communities are not compromised. We do not want any person to have to live with what we live with. We say 'not in anyone's backyard!'

Our recommendations are:

- independent research into the adverse health effects - studies that would include, medical, engineering and acoustic professionals
- a moratorium on building wind farms until more appropriate and rigorous guidelines are in place
- setbacks of over 5 kilometres, at least. If not 10.

I am sure though that you will understand as people who are living with ongoing health problems and their progressive development, and the knowledge that for many of us this reduction in health, well being and quality of life will accompany us to our graves, we see an

urgency for independent research, and the exercise of the precautionary principle in favour of people rather than political, economic or ideological agendas.

There is a desperate need for independent research so that appropriate guidelines for the design, placement and monitoring of wind farms are instated. Until that time t**he precautionary principle must prevail.**

berni m janssen
Mary Ann Ogle
Enid Thomas
Noel Thomas
Donald Thomas
Kim Thomas
Gunther Wilhelm
Maggie Reid
Andrew Reid
14 December 2011

Email sent to Dr. C. Watts 12/12/2011

My name is XXXXXX and my husband xxx and I, along with several other neighbours have been fighting the Macarthur wind farm since the end of 2004. This monster wind farm, supposedly the largest to date in the Southern Hemisphere is currently being constructed on three properties adjacent to ours in south-west Victoria.

South-west Victoria is some of the richest and most reliable agricultural land in Australia and is about to become "fly blown" with thousands of these rotating political monsters.

As the xxx of the fight against the Macarthur wind farm I have been subjected to some particularly intimidating and bullying tactics by AGL, (originally Southern Hydro) particularly during the Planning Panel held in February 2006.

My husband and I were given approval by our local Moyne Shire in 2006 to build two farm stay units near our boundary to the wind farm in the area we call the 1 kilometre "impact zone" of the wind farm. AGL didn't like this so they took us to VCAT – Victorian Civil and Administrative Tribunal who overturned the decision to grant us a permit.

For the past 30 years we have been breeding super-fine and ultimately ultra-fine merinos and during the past 12 years we have operated in conjunction a shedded sheep enterprise. Due to the highly sensitive nervous system of our extremely finely bred sheep, we have always been fearful of the impact of the low frequency noise on our sheep, as any stress to these animals causes their wool to break and renders the fleece worthless. We are one of only about 15 shedded sheep enterprises in Australia, and for the past nearly eight years, have requested turbines be set further back from our boundary in order that our business not be threatened. However, rather than co-operate with us in any way at all, AGL chose to attempt to literally crush and destroy us. During initial construction we have had two separate incidents whereby we've had stock losses due to AGL's activities. Even the constant noise of banging, thumping of machinery and the breaking of enormous rocks, in addition to reverse beeping noises on the enormous earth moving equipment has resonated into our sheep shed and this enterprise is under great threat, even before the turbines begin operation.

As vocal objectors to this massive project in our district we have been subjected to quite vicious verbal attacks by local people from the town of Macarthur which is at least 10 kilometres away from the actual wind farm site. This project has certainly divided our community and this rift will never be repaired. In fact, the wife of the principal developer was, prior to 2004 my closest friend in the district. Needless to say, that relationship doesn't exist at all anymore and we don't have anything to do with the local community now. Unfortunately AGL Energy Ltd. concentrated their attention in the very early stages of so called "Community Consultation" on the very small town of Macarthur which was literally on its knees after years of drought and depressed rural economy. They promised hundreds of local jobs, donated to schools, kindergartens and local groups, thus "buying" support for their project. They claimed 87% local support for the wind farm supposedly having 1100 submissions in support. However as I know the host families so well, I was able to determine that at least 50 % of the support names were their friends and families. This is

the disgusting way wind farm developers garner support for their supposed "green" projects. As far as I'm concerned the only thing "green" about wind farms is the buckets of money the greedy developers and host farmers receive at the huge cost of their neighbours and ultimately their community.

This south-western district of Victoria is the main breeding, feeding and flocking site for the Brolga. The brolga population has been under threat for many years now, and the proliferation of wind farms here has the potential to wipe out the brolgas. However, all wind farm developers employ Brett Lane and Associates, a company who undertake the flora and fauna studies and amazingly don't ever see brolgas, as they carry out their studies usually at the wrong time of the day or year, and don't ever bother to enquire of the neighbours as to their presence. We have had a pair of brolgas feeding on our property for years and as do other neighbours to the Macarthur wind farm, we protect and care not to disturb these magnificent birds. Of course the host property owners deny ever having had brolgas on their properties. Unlike other birds, the brolga has an enormous turning circle, just like a semi-trailer and it is because of this that they will be literally chopped by the blades of the turbines. In fact, with the 140 turbines of the Macarthur wind farm, and the possible 225 of the proposed Penshurst wind farm 2kms north, and the around 140 Willatook wind farm 2kms south of this wind farm, the brolgas don't stand a chance. However our Department of Sustainability and Environment have been far from pro-active in their attitude to protecting these vulnerable birds and it's been up to individual land owners who like us, have looked after the brolgas for years, to fight for their protection and survival.

As the permit for the Macarthur wind farm was issued in October 2006, it was due to expire in October 2010. In mid-2010 therefore AGL applied for an extension to their permit, having not commenced construction by this time. With their application, they requested significant amendments to the original permit, to the extent that the wind farm being constructed adjacent to our at the present time, bears very little resemblance to that for which they were given a permit for in 2006. Their amendments were approved and rubber stamped by a desperate Labour government which was literally "on the nose" and desperate for the green vote. The amendments were so significant there should have been a new panel demanded. I quote from correspondence from the Victorian Department of Planning and Community Development "on July 8, 2010 Minister for Planning agreed to a request from AGL Energy Ltd. to amend permit conditions -

one terminal station not two
above ground transmission lines instead of underground
scope of use of Vestas V112 wind generators including

- height to blade tip 140 metres (from 135)
- blade length 56 metres (from 50.5)
- reduction in wind generator nos from 183 to 140
- other minor updates.
- generating capacity from 1.8 megawatts to 3.0 megawatts.

"The assessment found that the proposed changes will NOT materially affect land within Moyne shire or any person, and that public notification under section 52 of the Act was therefore NOT considered necessary".

This was absolutely scandalous!!!! I objected to the Minister for Planning and demanded a new panel, but was refused and then requested through Freedom of Information documents pertaining to this decision, but this request was also declined by our government.

As a group of objecting neighbours, our combined concerns were numerous. One particular concern was that our ability to have our noxious weeds sprayed by air would be removed from us. However AGL claimed we would still be able to use aerial spraying for weed control. They even went to the extent of contacting our aerial spraying contractor and bullying him into signing a letter written by AGL and presenting this letter to the panel, claiming aerial spraying of noxious weeds would not be affected. Our country is rocky barrier country and aerial spraying is the only method of noxious weed control and it is essential we control our huge thistle problem. In latter years the Australian Air Agriculture Association has declared properties within close proximity to wind farms will NOT BE ABLE TO HAVE AERIAL SPRAYING TO CONTROL NOXIOUS WEEDS. Refer to submission No 1. by the AAAA to the Senate Review into Rural Wind Farms.

One of our most serious concerns as farmers in the south-west of Victoria is BUSHFIRE. As with all other issues, AGL have repeatedly claimed wind turbines do not pose any greater threat than normal farm machinery!!! At the time of our panel in February, 2006 a huge fire had just occurred at a wind farm at Lake Bonney in South Australia and we presented to the panel the video of the 7.30 report with very graphic footage of a turbine engulfed in flames and spotting all around in the dry grass. Since then there have been two other turbine fires in South Australia, one at Starfish Hill and the other at Port Lincoln. In the most recent turbine fire, the work safe authority of South Australia ordered fire fighters to not enter within 1 kilometre of the burning turbine. As a result the turbine, which was still turning, continued to burn, throwing burning debris over a very large area. The south-west of Victoria is one of the most bush fire prone areas, along with California, in the world. I have very vigorously lobbied and requested of the CFA a response which will assure neighbouring landholders we will have some specific protection from our state authority but their response has only been to tell me they have no concerns about the additional fire risk posed by wind turbines. In this rocky barrier country access by wheeled vehicles is very limited, and of course we will not be able to use fire-bombing aircraft either. AGL continue to deny any fire risk. In fact last week during a meeting with a very senior AGL representative, when we commented that there wouldn't be anyone to fight the fires here, we were told that they won't catch fire. He told us the turbines were much more sophisticated now, and they are constantly monitored. Their consultant also told us that there would be plenty of men willing to fight the turbine fires as they'd be dying to have a look at the wind farm!!! If it wasn't such a serious concern, you'd think they were joking!!!

We've always been aware of the lies and spin that wind farm developers have used in their attempts to win the support of naive country people believing their projects would solve all the problems of unemployment and financial strain encountered in small country towns. Sadly, the locals have been "conned" as our now Premier Ted Baillieu claimed as he opened a meeting I organised in 2005 in Hawkesdale, when he was the Opposition Minister for Planning. However, now that the massive detrimental impact of construction is being felt, the locals are feeling quite disenchanted. The roads in the entire south-western district

have been destroyed. That is, not just surrounding the Macarthur wind farm. I mean all roads from north, south, east and west for at least 100 kilometres have absolutely crumbled and disintegrated. The various shires patch them one week and they've disintegrated back to gravel the next week. Our road situation is so desperate that our local Moyne Shire has suggested that all of our main roads leading to the Macarthur wind farm may have to be reverted to gravel for the two year duration of this wind farm construction. There have been multiple truck roll overs and other wind farm related accidents. We have had taken away from us our right to safe travel on all of our country roads in this district – due entirely to construction of the Macarthur wind farm!!! Every day, 76 trucks and trailers roll into the wind farm site carrying enormous loads of gravel for construction of the massive "highways" throughout the wind farm site. Calculate the impact of this heavy traffic over two years.....

I refer now to our specific situation where during August our business incurred lambing losses due to the constant buzzing by a helicopter over our property ferrying cement from a batching plant on one side of the site, to a site near our boundary where a meteorological mast was to be constructed. The helicopter was used as it was too wet to bring the cement in by truck – from August 2010 to August 2011 we had 50 inches of rain which was the reason for the inability to go overland. So for two days our three mobs of 600 ewes and lambs were continually driven against the extreme fence as if they were being mustered by helicopter. As a result we lost many lambs through mis-mothering. Do AGL care? NO – we have to suffer those losses with NO COMPENSATION.

In the panel of February 2006 AGL committed to removing an access track near to our property when we complained construction traffic so close to our boundary would severely affect our ultra-fine sheep. They claimed it had been moved further away in order that we were not affected. So what have they done? They've gone back on their word and not just constructed an access track – it's a road built like the Romans built roads, huge rocks and like a super highway where trucks and vehicles speed to and fro all day long, blowing dust into our paddocks, thus contaminating our ultra-fine merino wool.

Also at the panel AGL in a written document claimed that the closest turbine to the Gardner property is 130 metres from their fence. Of course the hole for the turbine was dug recently and it's FAR CLOSER THAN 130 metres from our boundary. !!! It is frightening just how close that massive turbine will be to our property. At this stage we can see in the distance three ENORMOUS towers each with blades which reach far into the sky and these are 8 KILOMETRES AWAY!!! We shudder to think what the eight towers very close to our boundary will look like, let alone what noise they'll emit!!!

So these are just two examples of the lack of regard AGL have for their neighbours as they have deceived us with their promises of setbacks, only to completely reverse their original commitments.

As with all wind farm developers, they claim there is no evidence of land devaluation for properties in close proximity to wind farms. However, it's amazing that 17 families have been forced to leave their properties at Waubra in Victoria, and after only three weeks of operation at AGL's Glenthompson wind farm about sixty kilometres from here, the first

family moved out of their home. If people are having to leave their homes because they've become ill from low frequency or other noise factors, who would possibly want to buy their properties, let alone at their pre-wind farm value ? As evidence we have the early 2011 letter written by Shane McIntyre, National Sales Manager for Elders Australia where he claims that properties are devalued by between 30 – 50 % if they sell at all.

So far in this submission I have only commented on occurrences during our seven years pre Macarthur wind farm construction. We are yet to be affected by the vibration, low frequency or whichever noise will pervade our once idyllic property which we have lovingly developed from nothing 30 years ago. So far in south-west Victoria, the Waubra and Cape Bridgewater wind farms HAVE NOT COMPLIED with the noise standards. One would imagine, if people have already moved away from the Glenthompson wind farm it will possibly not comply. These wind farms only have turbines up to 2.4 megawatts. What will be the effect on our lives and livelihoods of 140 massive 3.0 megawatt turbines in grid form, as close as 1.7 kilometres from our homes, and practically right on our farm boundaries, which are after all our work places ?

I ask of AGL and our greedy neighbours -

Why should we incur massive loss of hard earned capital, loss of income and MOST IMPORTANTLY SERIOUS HEALTH EFFECTS in order that they maximise their profits?

Wind farm development throughout rural Australia is like an insidious disease. Governments have a duty of care to their people and what governments are allowing developers to get away with is immoral.

Xxx xxxxx

Hawkesdale/Macarthur Landscape Guardians

Xxx xxx

To: whom it concern

I have Family at Waterloo in South Australia and over the years have spent much pleasurable time there in the past.
Now it is a no go zone for me unless it is a Family emergency and help is needed thanks entirely to the wind turbines and the sickness they cause.

I was a sceptic at first after 3 uneventful visits, but on the fourth visit I was mildly effected by headache, chest discomfort and tinnitus (ringing in the ears).
The fifth visit was extremely uncomfortable with all of the above many times worse than before and stomach upset (diarrhoea) as well, I had to endure 48 hours there to help Family I could not wait to get out of the area, The tinnitus slowed at about 15 Km away and by the time we got home some two and a half hours later was back to normal and the stomach upset was gone next morning.

2 Family members have had to leave the area altogether due to ill health since the turbines were turned on and one soldiers on in constant pain because she has nowhere else to be able to go.

I believe the setback areas for these machines should be a minimum of ten to fifteen Km from all residences this is based on personal experience and experience gained from Family and friends in the area. The politicians that say 1 or 2 km should be forced to live there over a prolonged period to see for themselves.

I also consider it a shame that more consideration were not given to these matters given the material available on the internet and experience coming out of Europe the USA and Canada.
There is also the ongoing issue of who will be required to cover the cost of removal and disposal when these units have completed their 20 year life span especially the toxic material in the propeller units which is very dangerous and extremely expensive to dispose of and too toxic for land fill disposal.

Some research on the net recently shows that there are currently some 14,000 units decommissioned and left standing in areas of Europe and the USA only good for scrap but no one will cover the cost of removal so they continue to be both an eyesore and a killer of wildlife in particular migratory birds.....**green power – I think not**

Another tragedy is the historic value in South Australia's past history of Waterloo, which may well become a ghost town unless someone in authority acts responsibly.
"wind power at any cost" seems to be the cry of those in power and those who stand to make a dollar out of it.

Speak to those affected in the area before you allow this to happen in your back yard,
Don't just cop it, make the decision makers accountable

xxxx

I am writing to you, hoping that you will listen to people like me that have had experience living very close to Wind Turbines (Farm). We have had our whole lives destroyed from living extremely close to a very poorly planned wind farm built by Acciona Energy Company (Spain).

We have 4200 acres at Waubra, our whole farm is surrounded by Wind Turbines. Our family home is 800 to 900 metres from 4 turbines.

Acciona has purchased 8 homes. I can't work it out, the company keeps telling us there is no problem at Waubra but why have they purchased 8 properties? We think it was because the turbines were too close to homes, and were too noisy.

All those families did not want to leave their homes but they had no choice because of the health impacts. Living too close to the wind farm has destroyed what they once had too. The Primary School has about 20 less children because so many families in the area have moved away and we are one of those families. My son has had to leave Waubra Primary school.

We had no choice but to walk away from our family home because the health impact and noise from the wind turbines was so bad. I have had people call me from all over the place, WA, QLD, NSW, SA and America asking for advice. People all over the world are having the same problems. The turbines at Waubra were the biggest turbines that had been built and they are only going to get bigger and the health problem will as well.

I just don't understand why these Wind Farms aren't being built all over Australia's open country and why are Wind Farms being built or approved to be built in places where people live. It is very un Australian to be forced out of your home and have to purchase a house in Ballarat. It has put huge financial pressure on my family and I but we had no choice but to leave. Our health is number one and it was really suffering, living so close to wind turbines. I do not want this to happen to other Australian families.

Wind Farms have got to be better planned and there has got to be a health and impact study done properly. The Senate Inquiry recommended RESEARCH, as well as independent noise monitoring INSIDE people's homes, but NOTHING HAS BEEN DONE. We as people living 900 metres from wind turbines are living proof that there is a very, very serious health problem living too close to wind turbines. The only thing in our life that has changed is the Waubra Wind Turbines have been built in our backyard.

We as Australians do not just walk away from our home we built ten years ago for no reason. We have a very big problem at Waubra. Acciona submitted their first year report in last October but the Minister clearly was not satisfied with the report. I just don't understand how a non-compliant wind farm can still operate if the Victoria planning Minister Matthew Guy has not signed off on the wind farm which has been in full operation for 2 years this September. The minister still knows there is a problem with the non-compliant wind farm. What is he going to do to fix up the current mess he inherited?

I am no expert; I am a farmer and a Mother of three children. We all care for our environment; we plant thousands and thousands of native trees each year on our farm. We are living proof that wind turbines built too close to homes is not the answer. I am worried that this Federal Government is going to drive many more families off their farms with the proposed carbon tax, as it will just be used to build more wind turbines, too close to homes and working farms. I have told Julia Gillard about my family's situation, but she's not listening. Nobody is listening....

The Government has failed to protect the health of my family. Please do not let what has happened to my family, happen to anyone else. Please stop giving Australia's money away to Spain and making us sick.

xxx and xxx
Ballarat North
VIC 3350

Hi colleen

My name is xxx xxx, just got an email from Sarah requesting support in your battle with a wind farm project. Don't know if i can help much but will try.

I have lived with the noise from the Windyhill wind farm for the last 10 years and am the only resident affected up here in Ravenshoe.

My GP has diagnosed anxiety depression as I have a lot of the documented symptoms associated with noise experienced at my home.

I live a mere 400 metres from the nearest tower

I have lodged a noise complaint with my local council in early September 2011. A statutory declaration was also lodged with my complaint and also sent to Ratch Australia and also my state MP was given a copy with a request to make Representations on my behalf to the relevant minister.

So far not much has happened. The company has been told to comply with the conditions in the permit which they had not been doing. Readings were taken at my home some 2 months ago, I had to ring the company to find out what was happening to be told the computer modelling was INCONCLUSIVE a result well known to many down south.

That is pretty well where I am at the moment a poor result you will agree. I am still on medication and support from a psychologist to help maintain some sense of normality. This is only a brief note as I'm not exactly sure what information you require but rest assured if I can help in any way please call me on xxxx or email me.

Yours in the fight

Xxx xxx

To Whom It May Concern:

xxx xxx

Waterloo S A 5413

I came to the town of Waterloo for the peace, quiet and the beauty of the rolling hills about 6 years ago. I was a Fruit grower and exporter of Stone Fruit and Table Grapes in the Riverland for many years however the stress of doing that led me to give that up and move here to Waterloo. I have Heart and High Blood pressure problems, and after moving here I also got Diabetes about 3 years ago, I just got most of my health issues under control when they opened the 37 Waterloo Turbines, 2.5-3 Km away, which are directly in front of my House, (pictures included).

From the time they turned them on, my, my daughter and others in town's health has gotten a lot worse, some more than others. My brother got so bad that he moved from his house that just he spent over $100.000 + to renovate, to the next town and stays in a caravan, he comes here only for a short time and goes again because the turbines make him so ill that he can't bear to be here anymore.

My daughter xxx (age 17) came to stay with me and within a few days started to feel ill so I got her to keep a record, (also copy included) and took her to the Doctor in Clare, where I had an appointment, I showed this Doctor the records I kept on myself and xxx and told him that I think it has to do with the Wind Turbines, he got quite upset with me and said no he does NOT believe that wind Turbines can do this, even though I showed him the difference between being at home and when we were away, he told me for my high Blood pressure I should take one more Tablet at night , he even gave me a script for a much stronger Tablet and also said if by being away from your House makes you feel better, then I should move! It's not as easy as he must have thought to just pack up and go after making a place your home. I asked him about xxx and he just asked did you have a double appointment? (I didn't) I just wanted to know from him by looking at her records if I should make one for her, so he did look and asked her if she was on the pill? Because we recorded that her heart rate and blood pressure had been abnormally high for someone her age, She told him no And his only response was "then you need to make an appointment soon", so as you can see by her and my records when we are in Waterloo compared to anywhere else, there is a big difference and I'm thinking to send xxx to my other daughters house in Adelaide , and if I could move away from here please believe me I would, I just can't afford to I have put all my money into this place, but who will buy my house even if I put it on the market? I can't sell it knowing that by leaving here you can get very sick or even Die, we do spent a lot of time away from here now but that does not help me or my animals, I think that the wind farm company Roaring 40's should buy out the people and relocate them and use my house for research or any of the other homes.

To my knowledge 4 families have moved or have purchased another home in nearby towns and only come here to work or to run their farms.

I'd also like to tell you about a friend of my brothers who came a few weeks ago for a visit, at the time I was speaking to a reporter from the Advertiser, Penelope Debelle about the wind Turbines when they arrived at my house , I asked them in for a Coffee, the man is 82 years old, and in the short amount of time he was here he had a bad reaction to the turbines, within half-hour he said his head was aching and he felt like he was in an airplane at high altitude,

and my brother had to take him home. When my brother got back he told me that his friend said to him *quote* "I didn't believe you when you told me about the Turbines but I do now, if you gave me $1000 a week I would NOT live in waterloo" *end quote.* If you would like to talk to him, His name is xxx xxx Hoyleton SA 5453.
The wind Turbine Syndrome is real, as you can see from the records the turbines are having an ill effect on us, for myself, pain in the chest, like someone is squeezing my heart, nausea, really bad headaches and the ringing in the ears and the pressure behind your eyes is unbearable to the point that you can't see properly and you feel like you're sea sick, I get woken up from sleep in a panic, sometimes 3-4 times a night and when you get out of bed you just want to climb back in, I also found that animals have some wired things happening to them, my chickens have stopped laying for months now and my brothers dogs will sit and look at a bare wall for hours at a time and when he still lived and slept here his dogs used to sleep with their heads under the lounge cushion, or his Jack Russell will sleep under 2-3 pillows and they didn't spend much time out side, my brother moved with his dogs to Manoora 6km away and he tells me that it's not far enough from the turbines so we went to see how far we need to go before we feel better, first we went to Marrabel, the last turbine on the ridge is about 10km from where we were and we could still feel the turbines, so we went 15km + in the small town Hamilton and we had lunch there, by the time we had finished lunch we both felt better, on the way back to Waterloo we got just into Marrabel and the headache and pressure and ringing of my ears started again, I have suffered from Tinnitus for many years on a scale of 1 -10 my Tinnitus was 2-3 maybe on a bad day after being on the Tractor all day a 4, but most would go away or by playing a Radio or some background noise it was fine, now it's about 8 out of 10 and even after a week in Adelaide it didn't get much better, and I found that some noise or some people talking make it worse, so I got my Doctor, Lisa Koo from Clare to refer me to an Ear specialist Dr. S Krishnan, referral copy is with my records.

I would like to get something else straight, in the senate last week one of the wind farm managers CO stated that Dr. Sarah Laurie was the cause that so many people have these health problems and that she went around and told the people about the wind turbines syndrome, this is not true I did my own research on the web and found hundreds of people with the same or similar problems that we have here in this town and this problem is worldwide, the person who rubbish this Lady for trying to help, should be ashamed of themselves, I got in contact with her, not the other way around, I went to her for help and I found her to be one of the nicest human beings that I have ever met.

With that I will close my letter; I hope that it will help the senate to come to see that we do need to do a lot of research into Wind Turbines and the health effect on people and animals, and the effect on home values and how people should be compensated.

Kind regards,
Xxx xxx

Waterloo SA
5413

To whom it may Concern.

I/we would like to let you know about our urgent Concerns!
I/we have for the effect on our Health the Waterloo wind farm has on us!

I xxx xxx have never slept so badly;
From the time the wind farm has been put up on the hill less than 3km away, which is playing havoc with my everyday life.
Headaches, awake all night because of the jet like noise coming over the hill, when the wind comes across from the east to the west, stress, lack of concentration etc: I feel nauseous when I get woken up at night, the noise and Vibration has a weird effect on me.
I/we know that you know what is causing this problem, because I'm not the only one with this reaction to the Wind farm,
This problem also has a massive impact on Property value in and around the town of Waterloo and anywhere near the wind farms.
I/we have asked around. People know now, and have
Health problems and noise problems, and resale problems,
No one wants to live anywhere near wind farms.
This has now destroyed my future.
Roaring 40s said at the town meeting in Waterloo they talked to concerned Citizens? I/we have "NOT" seen anyone in this town yet...
What will you do about "THIS" problem? Or are you going to let the Wind farm make us sick? Financially ruin us? Or make us leave our Homes – So that they can make money for the shareholders? So much for GREEN Power?

Kind regards
Xxx xxx

Hi this is my experience I had visiting a friend in Waterloo, Mr. xxx xxx of Hoyleton South Australia 5453.
My friend xxx xxx came to my house at Hoyleton and told me that he has to move from his house that he is in the process of renovating, I asked him why? And he proceeded to tell me, the wind turbines are making o lot of people in the town very ill, and he went on about what affect this Turbines have on himself and other's in town, so I said to him if we can go and see what he has done on his house, the last time I went to see the house he was still in the frame stage, when we got to Waterloo, I was very surprised on what he and his brother had done, the house is nearly finished, and they turned a old Service station in to a great three bedroom house, a lot of work went into this place, and now he can't live in it, so I said to him " you are crazy " the wind turbines are not causing me any problems and I can't hear them, they don't look very nice up there on that ridge, so after looking around, Johannes said to me let us go and have a Coffee with my brother across the road.
When we got there, he had someone there, but he told us to come in anyway and he will make us a coffee, and he told us that he was giving a interview to the Advertiser newspaper, about the Wind Turbines.
As I was drinking my Coffee in the Kitchen I felt unwell, and we would only have been there for half hour, forty five minutes, my head was starting to hurt and I was sitting there with both my hands holding my Head, I said to all there it's like being in a plane at 30,000ft,as I was leaving to go out the door I also lost my balance and had to hang on to the wall all the way out of the house, I thought I was going to pass out, when xxx xxx brother) told us to leave, and we did, only to get about 10km away from Waterloo and the headache and pressure went away, as we were driving I said to xxx that I didn't believe him before when he told me about the Turbines , but I do now, and said to him I couldn't stay there even if you gave me $1000.00 a week, NOT even $2000.00. So whoever is to read this letter I hope my experience with Wind Turbines will help, believe it, it's real.

Kind regards

Mr. xxx xxx

To whom it may concern,

Xxx xxx
Xxx xxx
Waterloo S.A
5413

I have been living in Town of Waterloo since 2005.
Since the wind farm has been operating my personal Health has become so bad, living here is unbearable!
Having to put up with sleep deprivation, a constant
Buzzing sound in my ears and when the wind comes from the East the noise produced by the blades sounds like a plane is over head, however this plane won't go away.
For about the past two month I have been taking Blood-Pressure lowering tablets when before my blood pressure was on the low side.
To make matters worse, electrical\electronic devices don't function as good now as compared with their performance before the wind turbines went on line.
My mobile phone's reception has been reduced by 30%.
At the Roaring 40's meeting we were assured reception would improve.
Because the township of Waterloo and the health problems associated with living near wind turbines have become very public, who would want to purchase my House if I were to sell it?
Wind farms have their place as long as they're NOT in anyone's front or back yard.

Yours truly,

Xxx xxx

Xxx xxx
Xxx xxx
Waterloo SA
5413

To whom it may Concern.

I/we would like to let you know about our urgent Concerns!
I/we have for the effect on our Health the Waterloo wind Farm has on us.
I xxx xxx have never slept so bad,
From the time the wind farm has been built, which is playing havoc with my Blood pressure, Diabetes, Mood swings, Stress, And Concentration: I feel like crap most of the Time, it also has a weird effect on my two Dogs.
I/we know that you know what is causing this problem, This problem also has a massive impact on Property value in Waterloo and anywhere near wind farm's.
I/we have asked around! People know now, and have Health problems and noise problems, and resale problems, No one wants to life anywhere near wind farms.
This has now destroyed my future.
They say you are talking to concerned Citizens? I/we have "NOT" seen anyone in this town yet...
What will you do about "THIS" problem? Or are you going to let the Wind farm Kill us? Due to making Health problems many times worse?

Kind regards

xxx xxx

7/12/2011

Xxx xxx
Xxx xxx Rd
Cape Bridgewater, Vic, 3305

Dear Colleen,

It has come to our attention via Dr. Sarah Laurie, a wind farm is being proposed for the Flyers Creek area and a group is mobilising to oppose this inappropriately sited wind development, close to a school and local residents. The fact they are considering building close to a school appals us.

[redacted] and our 9 yr. old son and I live 900m. from the Pacific Hydro wind farm at Cape Bridgwater, this started operating in 2008. We are being profoundly disturbed by the turbine noise and vibration and it has been an ongoing problem for some time. After a distressing night on the 24th Oct 2011, I decided enough of being quiet about the issues we are dealing with and started making complaints and writing letters. I complained to the EPA on that night, I was told the next morning someone would come and install a noise monitoring device. We are still waiting. (The noise wasn't so much the problem, the vibration was.)

xxx, over the years has complained to Pacific Hydro by email, telephone, visits to the local office, to the Melbourne head office to no avail. They send complex technical data, that's irrelevant, inadequate or too hard to understand. We recently requested the wind farm be turned off for Christmas Eve and Day; their legal team asks "Why should we do that?" They claim there is no problem at Cape Bridgewater and xxx xxx from the local office wants to install a monitoring device in our house. I refuse to co-operate with this, I don't believe they record data accurately nor measure the disturbances. They won't accept an independent investigation, they don't trust us to use the right person and we don't trust them.

I have been in contact with the local council, the Glenelg Shire, to complain and explain what is happening to us. The health officer was sympathetic but says Councils (are hamstrung), await the results of a CSIRO study into wind farms due sometime next year.

I have also corresponded with the Dept of Planning & Community Development, Warrnambool and given a contact at the EPA, who still hasn't responded to my email. I requested the EPA install a monitor to measure full sound spectrum down to the lowest frequencies and a monitor to measure vibrations.

There needs to be more comprehensive investigation into what we are experiencing. There have only been a few days with no vibrations/noise in months. I have a hearing impairment and don't often actually 'hear' the noise but my family does. I can't decipher if what I feel/hear vibrating is from air borne sound, bone conducted sound or sound vibrating through the ground or just vibration from wind turbine movement? Whatever it is it is inescapable.

I continue to be amazed by the lack of proper investigation into the effects of wind farms. Dr Sarah Laurie and the Waubra Foundation seem to be the only source of information about wind farm effects and the only people speaking on behalf of residents living near wind farms.

The wind farm people, in newspapers and on ABC radio, proclaim loudly they have community consultations and keep communities informed. We recently had a phone call from Pacific Hydro Portland office, to say there is work going on that day at the wind farm. They had actually been there for a week, working. This was the first phone call we have had in all the years of the wind farms

operating and constantly breaking down; to inform us they were doing work. We have endured a lot and in silence for a long time.

We put a submission in to the Senate Enquiry, I have included an attachment. It is great that a 2km limit from wind farms to the nearest house, is in place to protect people, but it should be 10km. Who can tell me we are safe from negative effects at a distance of only 2km from a wind farm generating electricity. We take precautions with x-rays, microwaves, mobile phones etc. as much as we are able but tell me how do we protect ourselves from electromagnetism and how do we trust studies done overseas are enough… we simply can't, not while people are getting sick. We don't even know what we are getting sick with or from? (It's absurd. We don't live in a third world country with sub-standards and leaders without morals, do we?)

We attended and I was shocked at a recent Department of Health. (Melbourne) meeting. Seeing other community members from other wind farm sites and how ill and stressed they look, to hear their stories. To realise we are not alone in our experiences and that is how we also look. I want to know exactly how many people have been forced to move away from a wind farm. The local Health Officer couldn't tell me how many have locally been affected due to confidentiality but he can't deny that local people have been. Two of our neighbours have moved away, due to the wind farm they can't live here, one have relocated and the other, living at different houses. How many like us will have to move away and can't afford to or don't even want to? Why is no-one doing anything and who believes us? The Minister for Health states there are no ill effects from wind farms. Where does that leave us?

Pacific Hydro won't accept any responsibility for the problems we are having, claiming the wind farm operates within acceptable noise levels. We had an unaccounted oil splatter over the west wall of our house, the only logical explanation being it has blown over the Cape from a turbine. Pacific Hydro claim, it is unlikely to originate from the towers at such a distance. I remembered afterwards, at some time on a hot day, I could taste oil (?) or something in the air, thought nothing of it at the time and didn't realise it was a substance that ended up over our house. Why then are there still stains visible on our house and where else would they possibly be from? They also claim never to have heard that the wind farms cause vibrations that annoy people. Their responses are frustrating and upsetting.

Some years ago I complained to the Glenelg Shire Council about the noise and their response, "it had nothing to do with them". I have complained to my GP's who look at me blankly, one suggested to medicate myself with sleeping and anxiety pills. My specialist has suggested it would be best for my long term health to move away, but won't put that in writing. Often by the time we get to town our spirits have lifted and any symptoms have abated. It is difficult dealing with the medical system and I feel disrespected. Disheartened.

When the wind farm was proposed for Cape Bridgewater, we were generally supportive of them even though I had many doubts. We attended the council information meetings, had the CEO's of wind farms drink coffee in our kitchen, we attended local meetings, we had questions and doubts. We were assured there would be no noise disturbances, no effects from EMR's, no shadow flicker and when I continued to ask questions, a wind farm CEO became intimidating and spoke of me being responsible for greenhouse gasses etc., it was very upsetting. We would be given tree screenings, double glazed windows, xxx would get training overseas and a job on construction, it didn't happen. Not only was a signed contract broken by them, a caveat was placed without our knowledge on our land. Years of not having our complaints to Pacific Hydro responded to and you may begin to understand our trust in Pacific Hydro has been broken. We definitely don't regard them as good neighbours and we wouldn't recommend living within ten kilometres of a wind farm.

I have been documenting my experiences for the past year after returning from a month long holiday, well rested and really noticing the wind farm on our return. It took a week to feel 'normal' and four weeks away from the wind farm to feel rested, relaxed and also energised. Until we had this holiday we

didn't fully realise the impact the wind farm was having on us. It was from this realisation and the frustration of not getting anywhere in communications with Pacific Hydro, I decided to make a record. These are personal observations and accounts and I am cautious of sharing them. Pacific Hydro is aware of my 'diary' and requested a copy to compare with their data. Having no wish to put myself in the position of being further negated by them, I have not passed them a copy. Just having to keep this record really angers me sometimes. It is time consuming and when you have people saying from one level of government and business to the highest level that there are no ill effects from wind farms, you are left with no option but to continue with it, if only to vent feelings.

The vibrations are still here, driving me mad most nights and days, and there is no escape from it. When I called the EPA, the vibrations went for 36hrs without stopping. I feel them throughout our whole house, in my bed, at the kitchen table, everywhere. I feel this vibration as pressure on my body; I feel it vibrating through the floor and furniture. Even through the ground outside. The Health Officer said it is coming through the schist.

There have been comments of 'nimbyism' and don't you want jobs etc, comparison to other noises like traffic, and social divisions in our small community, and in my family. Physically it is exhausting living near a wind farm, I am always tired. This is explained by my Endocrinologist as ongoing years of sleep deprivation and to move away. It is more than being simply tired; it is at cellular level, bone deep tiredness. I've been a night shift worker and a new Mum, I think I know sleep deprivation and when I'm tired from lack of sleep. Even after an undisturbed night's sleep, I'm exhausted and tired upon waking. I am usually woken early by wind farm disturbances. There are different types of head- aches; they are also hard to explain, not like a headache, more of pressure, fuzziness and 'sick' feeling. I was a person who never went to a Dr, never had headaches or this sort of tiredness, until the wind farm was constructed next door.

I've had tingling feet, like electricity is moving through them. Ringing in the ears, which was a pre-existing condition with my hearing impairment. But I used to go years without single episodes of tinnitus and now it's constant. At times I am extremely sensitive to sounds and loud noises, I'm easily startled. I'm certain the high pitched sound I sometimes hear is a malfunction in the turbine mechanicals, just before they stop or break down. Being partly deaf, I don't always hear the wind farm noises but I feel it and vibrations through the house, yet xxx and our 9 yr. old often don't feel them. They hear them. We all look tired, all the time.

There are times at night I feel the vibrations inside my body, in my organs. I don't mention a lot of things because it sounds crazy and I have no explanation or even words sometimes to describe some experiences. I home school my son, it's difficult to concentrate and stay patient, while so tired and distracted. This could happen to the students at your local school.

Even snakes act aggressively when the vibrations are bad; we had two separate snakes on the same afternoon come out of hiding and for the first time I've seen, were striking out at our hens and native birds. Usually we leave the snakes alone in peace or have them removed and they don't bother us, but I was scared by their behaviour.

I feel tense and often irritated and angry with my family. Often feeling frustrated. We argue. There are days when I can no longer withstand the noise, vibration and whatever unidentified disturbance I am experiencing and we drive into our nearest town, Portland just to get away. I get facial rashes after showering, is that from something in the water or may it be stress related? We did find oil spatters on the west, wind farm side of the house, is this compound safe? Did it end up in our drinking, tank water or groundwater?

Pacific Hydro gained access to council records of an investigation into an oil spatter on a neighbour's property. The tests done apparently detected nothing. I'd like to know why we as we live within the 2km zone we weren't contacted by either Glenelg Shire or Pacific Hydro, to inform us there had been a problem under investigation, as a courtesy and in the spirit of keeping the community informed. Who knows if there have been other oil spatters here or elsewhere close to wind farms? We believe several gear boxes have been changed at the wind farm, this could explain the oil problem? I need to know if spatter of an unknown substance from an 'unknown' source is likely to occur again and is it getting into our tank or groundwater and is it safe. These questions don't get responded to.

Pacific Hydro didn't visit our house to investigate this. It took several phone calls, a visit to their head office, more phone calls just to obtain MSDS sheets, for gear box oil and lifting chain grease, a total of nearly twelve months. They requested we fill in a complaint sheet as per company policy. I have objections to this, as a phone call should be an acceptable avenue for complaint. A written noise complaint, submitted on their official paperwork back in 2008, to Emily Wood, (Pacific Hydro) was never responded to. Thus we have a problem with following these company protocols. The delays and lack of communication, their lack of response to our neighbour's complaints, frustrated us to the point we no longer think it worthwhile and have little incentive to communicate with Pacific Hydro.

I would never have described myself as stressed, I've always been calm but I am not anymore. I have woken in the night frightened, with a pounding heart, rapid pulse and rapid breathing, for no reason. I have had hurting teeth especially my capped tooth. I had frequency of urination at different times over the years; I have Hashimoto's disease, (related to thyroid) and heavier menstruation. Is this related to the wind farm operation? … I don't know. I do know I have little motivation left to get things done at home due to lack of energy.

The turbines are always stopping and starting and always breaking down! Apparently the European wind turbine used at Cape Bridgewater is not suited to Australian wind conditions. We still have constant road traffic with the maintenance crews racing up and down our little road.

Who is educating us and who is learning from us? The problems do not go away because some expert, somewhere, says the noise is below some limit and acceptable. It's not, I am still suffering disturbed nights, feeling ill, having head 'aches' and all sorts of problems. And I am becoming angry and upset. I am certain that more than the noise is causing distress to my body.

I do know I am getting angrier at Pacific Hydro, our council, our government because no one seems to be listening. Who is investigating and documenting what is happening to us? How many people are being forced to move away from wind farms? Why is no-one is doing a post wind farm impact review? I'm suggesting one is done to determine the effect of the wind farm on Cape Dunesque and Cape Bridgewater. Why aren't we kept informed? Why do we feel isolated and alone?

I am angry about it all and can no longer pretend to myself it is okay. Something other than noise is causing illness, because sometimes when the turbines are turning gently or not at all, I feel sick, it is too hard to explain. It needs thorough investigation as people living with wind farms are sick and being forced to leave their homes. I have disclosed my health issues to few people, at this stage and appreciate respect for my privacy. Our health is at stake and I'm feeling very protective of my child who has no voice. What long term effect will it have on him as a growing child and on us?

I dislike confrontation, I dislike the time needed to deal with all this and the fact we have to deal with living next to a wind farm but I am tired of being tired and sick. I am tired that money means more than people. I am ashamed that in our developed country, all these people are getting sick and nothing seems to be done about it. People are not being properly updated and informed or even believed. We are paying for our heads buried in the sand in more ways than one. To anyone thinking that wind farms are the answer, you need to consider that all these people are being affected by them and to listen to

them and their stories. Australians especially in rural areas are pretty tough but we're not stupid and we're not staying silent.

The Department of Health, Victoria has undertaken to continue to listen and engage with community members and communicate transparently. No-one from the Department of Health has approached us showing interest in our situation, informed us of adverse health effects of wind farms or to suggest any kind of study or investigation into our health, as neighbours to a wind farm. If the Department of Health neglect responsibility, who will then deal with the ongoing health problems experienced by rural people living next to a wind farm? What work on issues identified is actually being done? The longer our exposure to whatever is the cause of ill health, the worse our symptoms appear to be. I believe Governments must have a duty of care towards those of us living next to wind farms and must actually act to ensure our wellbeing and our health are improved and maintained. It doesn't seem to be happening.

It is disheartening to discover that Government agencies have no well-defined roles and responsibilities regarding wind farms. It is Government agencies who give support and approval to wind farm construction in Australia and with that power to make decisions on behalf of Australians there is responsibility towards Australians, responsibility to me and my family and others, to act on our best behalf.

There were protests prior to wind farm construction, I regret not fully investigating and being more supportive of those concerns and perhaps if the Government agencies had actively listened to concerns voiced then, appropriate policies would be in place now.

Voicing concerns about the wind farm has been new to me, I have had little idea who to contact and what to do, there has not been a 'group' in our locale since before construction and we at times feel isolated and alone. We don't have any legal advisors or in depth studies or the money that Pacific Hydro has access to but I have a belief that truth always speaks the loudest.

For years xxx has been saying let's move away, I steadfastly have refused to, convincing myself we could continue to live here next to a wind farm, pretending there are no ill effects, thinking I was imaging things, convincing myself I'm not sick, tired or even depressed. I have loved our home and region but feeling now we have no option but to leave. We don't know the long term effects and that scares me.

Thank-you for reading my lengthy letter, I hope it is helpful in some way to you and helpful in telling others our experiences.

Sincerely,

Xxx xxx

Concerned community member.

Dec 9, 2011. This is a public letter.

From: David Libby
RR2 Ridgetown, Ontario, Canada
N0P 2C0
519 397 9100

Information presented in this letter is considered public information and may be distributed or copied unless otherwise noted. Modifications are not permitted without the consent of David Libby. I have written documentation to prove every statement in this letter. One exception noted near bottom.

I live near the RES Canada Talbot wind farm, 50 Siemens 2.1 Mw turbines. Started operation Dec 2010. I was never given any notice that these turbines would be built. The 2 closest turbines are 700m and 1100m from my home.

50% to 70% of the time the turbines are somewhat noisy to extremely noisy. I have documented this since December 2010. I have taken measurements of 60 decibel at times.

I have suffered sleeping problems, headaches and nausea since these turbines began operation. These problems directly coincide with the noise levels of the turbines.

I have notified all 3 levels of government, wind farm operator - RES Canada, local health office, etc, etc. of this problem on a monthly basis in writing. I often do not get a response at all. And if I do get a response it will state; "Complaint received. Thank you for your letter." or something similar.

Ontario Law states that noise levels at any receptor should never exceed 40 decibel with 5 m/s wind speed.

The Ontario Provincial government agency responsible for enforcing this regulation has never taken any noise measurement at my home or any location near this wind farm.

The wind farm, RES Canada, claims that they are taking noise measurements. I have no proof that this is true. RES claims that they are in compliance with Ontario law. But offer no proof that this statement is true.

All of my neighbors, who also live at a similar distance or further, have similar complaints. I do not have written documentation of this. I have spoken with them many times.

Absolutely nothing has ever been done by any parties involved to attempt to resolve this problem. It is a widespread problem across all of Ontario. Ontario now has approximately 1000 wind turbines in operation. With intentions of installing 1000s more without acknowledging or correcting any of these issues.

David Libby

STOP THE HARM BEING DONE Is it criminal conduct .Is it lack of knowledge. Is it greed? BUT IT IS STUPID people in pain, people leave their homes, people with their lives wrecked "; I CAN NOT TRUST MY NEIGHBOUR ACCIONA".
My concerns in regards to the operation of the waubra windfarm is the lack of Integrity of those involved with the development firstly the conflict of interest by the local councillor who chaired a general information evening, refusing people with concerns asking questions regarding negative affects that may come from the operation of the wind farm this councillor now receives some of 6000 dollars a year as a facilitator, the public was upset with his conduct ,and another meeting was set a week later but was disbanded with a bomb threat ,was the councillor involved, who knows the incident was hushed up.
This was at a time when Dr David Iser Alerted the public about issues at Toora in relation to adverse effects the only reason nothing happened is because the local council could not justify spending some $ 500,000 of public money in court costs. Since then money from the developers HAS DONE THE TALKING At Waubra the people who did not trust the developer were paid sums of money, there are families that was very vocal and are now not talking about their issues I have heard that the developer pays rental equivalent to a number of turbines as turbine rental to stop possible any bribery claim so as to satisfy the complainant, as well as double glazing of windows, If the predictions were correct this would not have happened ..
The people like ourselves that trusted that things were done correctly ,the developer at this information meeting stated that the sound coming from the turbines is not harmful to humans because it was of high frequency, this is not true the highest readings done inside our house done by [MDA] was in the low frequency range, this was the start of the on-going PROCESSION OF LIES, A brief encounter with the original developer stated there would be no noise ,A planning panel meeting at our property revealed that the noise level at our property was some 38 dBA to my Son xxx but the company rep told the chair person that that noise level would be 34 dBA. My Son's concerns to build a house where bluestone remnants were, was dismissed the house sited some 400 mts from the nearest turbine was ignored, an earlier call to the shire was meet with a reply that the shire was better off with the wind farm than xxx living there, this was false because in fact the rate return is about the same for a 3 million turbine as a $500,000 property .. In fact they do not get enough money for the shire to ensure compliance and solely rely on the developer to supply information to prove compliance which is not understandable even if people were adequately trained, for instance Acciona supplied the Victorian planning Dept. with information to prove compliance in Oct 2010 compliance still has not been proved and I believe cannot be proved because 3 wind speed monitoring towers have been removed prior to post construction monitoring so the wind speeds would need to be fudged to get a result.
A chance meeting with a Acciona,a Sub Engineer revealed that he believed we were affected by development and suggested that not to complain because our concerns would be addressed as time went on, he also stated that it would take up to 2 kms for the sound to come to ground from the turbines ,this explains why people living at 1.4 km from the turbines are more affected. [survey New Zealand The Dean Report] which includes all of my close neighbours who all experience health problems ,out of 5 houses only one elderly couple still live permanent because of no other choice.
After the wind turbines started operating I complained to my Son xxx that I was getting headaches after getting up of a morning 2 days in a row, when at our Waubra Home, our farming operation include a northern property some 175 kms north west where I stayed the following night, when I woke while at the northern property I got up without getting a headache but after sleeping at the Waubra Property the next night

I got up with a headache the following morning, My son advised me that on the internet that there was what was called wind turbine syndrome which can cause headaches from Low frequency Noise and also stated that there was information on the internet that overseas Acciona had put a family whose child got sick near a wind farm in a motel to get away from the turbines, for Acciona to say that they only have trouble at Waubra is a not true ..

W e moved to a vacant house in Ballarat for about 7 days, I visited a hearing centre and was told that low and high frequency sound will cause headaches and that I must go to the doctor, the Doctor I seen did not know what to do and advised me to see my own doctor which was several days later, because I thought that the problem was coming from where the most turbines was, we decided to stay in the house with the wind coming from the north this was the first time we slept in the house with all of the turbines operation and the next morning I had dreadful headaches like no other that I had experienced before, I went to Acciona,s Office with my Son xxx at the wind farm and spoke to Steve Beaton who Appeared to be fair about the situation stated that they had not measured for low frequency noise before he arranged to have Christophe Delaire From Marshall Day to do independent monitoring and that we would get a report from Christophe Delaire ,After Acciona agreed to give me a independent results, permission was granted for measurements to be taken inside our home to this Day I have not received an independent report from Marshall Day A request for this report was made on many occasions including the Senate Inquiry the Chairperson said that Acciona would be asked for the report but at the inquiry Acciona Denied doing monitoring inside houses which is not true. Myself and my Son Xxx was present at the installation of equipment, we took photos of equipment and the dates on the data coincide with the time of investigation and Acciona have stated that we have received the data but no independent report was received.

Acciona has stated widely[attached] About the investigation of infrasound inside of our home in the media by their Managing Director Mr Brett Thomas[see attachment], I believe it is a matter of public safety and that The Federal Police Must acquire and make available the report that states there is no different than any other farm house, available peer reviewed to developers and the general public before any consideration for any windfarms to go forward, this is in direct conflict to my measured observations. and the subjective assessment ,a requirement of planning permit was not done therefore I claim that no one associated with Acciona can be trusted. The director Mr Brett Thomas stated that investigation was done inside our home the evidence appears to be removed. I believe there was no report done by independent International experts because there is no evidence that Christophe Delaire is an international Acoustic expert as he has not had the training to support this claim and he was the person who did the investigation.

Mr Brett Thomas,s Claims that the investigation was done by international experts has not been substantiated. Brett Thomas Acciona claim of investigation was done inside is the same as my claim and that other Acciona,s Personal at the Senate Inquiry deliberately mislead the Inquiry by saying testing does not get done inside homes I suspect to avoid supplying the Evidence to the senate inquiry.

Acciona,s Managing Director Mr Brett Thomas Has not supplied evidence to the public about the presence of Low frequency noise which includes sound in the infrasound range in our house as against any other farm house to give the general public a false sense of security by saying infrasound at wind farms is no different, when in fact it is the dominance of low frequency sound including that in the infrasound range that has forced people, ourselves and our neighbours from our houses which has left me brain affected from the vibration in the atmosphere [Air quake]radiating many kilometres from where the turbines are operating.

Even though I have not lived and very seldom entered the house at xxx stud farm road ,after being affected and being advised that I would be continually be affected by being in the location of the turbines . Bad affects most recently occurred 6lans away from the turbines On some accassions I experience pressure in the head at approximately 10 kms away from the turbines the affects also include chest pain, tinnitus or noise in the back part of the head as well as constant pain throughout much of the body, loss of brain coordination with the muscles including the muscles at the base of the scull and the muscles down the backs of the legs creating a lot of trauma, lack of mobility and a lot of pain with leg movement, lack of sleep because of waking with pain in the legs created with movement while asleep.
I believe that the effect on my sympathetic nervous system created by the impact of amplitude modulation of sound in the infrasound range coming from the Waubra windfarm. operating outside permit conditions of permit may be terminal ,It is known by those trained in physics in both the Medical field and those in the Engineering that frequencies in the infrasound range is extremely dangerous to health and the effect of amplitude modulation on the brain ,this information has been made available to Mr Brett Thomas with a response that the information is not new so Mr Brett Thomas managing Director of Acciona is well aware of this aspect [that is amplitude modulation or pulsing is prominent at my property in the peer reviewed Dean Report [The Noise Impact Assessment Waubra Wind Farm]
On June 17 2010 at a meeting I had with Acciona senior management I alerted Acciona about my concerns that I did not believe that the turbines were complying to permit conditions that requirement was that some 50 turbines would need to operate in low noise mode to comply 3 of these are as close as 400mts from my property. Since I alerted Acciona they have introduced there noise management plan have purchased 2 properties because it was uneconomical to run the wind farm in low noise mode ,One must question why 50 turbines were placed in the wind farm requiring them to be in low noise mode to comply when it not economical to operate ,and the requirement that provision to allow for SAC,s if present, was not addressed at the design stage of the wind farm .development is very bad engineering. The original engineer claims that turbines should be at least 600 meters apart, One asks why aren't they, most of the turbines are approximately 300 to 350 mts apart how can this occur. It is known by the developer that for reasons in The Dean Report that I am and will continue to be affected by the operation of the Waubra wind farm the conclusions of the report include
[1] that SAC,s are present.
[2] that background compliance monitoring is not sustainable.
[3] that meteorological conditions ,wind turbine spacing and spacing and associated wakes and turbulence ,vortex effects, turbine synchronicity, tower height, blade length, and power settings all contribute to sound levels. [The report states these affects can add 10 dB to the base prediction]
To counteract SAC,s affect a 5dB penalty applies SONUS believes up to 2 thirds of turbines need to be removed for every increase of 5 dBG in sound levels the turbines emit.
The Operation of the Waubrahas caused a lot of harm to my family we now suffer lack of amenity, loss of use of infrastructure, devaluation of property values [up to one third less], permanent loss of health no real recovery likely [even after virtually not entering the wind farm area for at least 3 mths] because of being unaware of where the predicted noise emissions from the turbines would travel because there was no noise contour map of the area, and even though the developer was aware of low frequency infrasound concerns for since the 1980,s[attached] and never bothered to investigate, it is quite apparent that the increase in the size of the blades has direct

relationship to increased adverse health effects over and above audible sounds of nuisance have occurred.
The conduct and attitude towards our concerns responded to with only fictional response from the person responsible for ensuring our concerns are dealt with in a responsible manner is the Managing Director of Acciona Mr Brett Thomas his actions are that of a DICTATOR and a TYRANNICAL ACT. These comments were concluded after receiving a registered letter from Mr Thomas, In his letter to me included he stated that he failed to understand my concerns and made assumptions of what he thought and then stated that I had nothing to Mediate and has refused to talk to me since I made a request to speak to the most senior company representative at there Melbourne Headquarters early June 2009, I regard only receiving only raw data and not the full report from MDA on the investigation of low frequency as THEFT of information to defame me by using fictional results to contest my claims of testing by saying there is no difference in the low frequency sound levels in our home and any other farm house without evidence available to substantiate his assertions because my investigation [attached] proves otherwise I have good reason to believe that Mr Brett Thomas the managing director has made the information unavailable to support his own agenda ..
Please find attached evidence to support my claim that low frequency sound in the infra sound range[less than 20 hz] is high at our house at xxx stud farm road as compared to our farm house in Northern Victoria well away from the wind turbines. It must be noted dB is a logarithm measurement and a difference of 20 dB equates to 100 times more force.[info attached]
It must be noted that after living in the house at xxx stud farm road for only one night with all the turbines operating and both My wife and myself getting ill taking at least 5 mths to recover it is the fact that after recovering a large degree by staying away from the wind farm area in this time of recovery and returning to harvest crops in early 20 I 0 I have experienced serious health problems after doing the harvest and general farm work with minimal time of exposure, since this time all stock have been sold off the property I have not worked on the property for 3 mths very seldom visit the area and my son spends as little time as possible in the area of the wind farm.
Please note the extremely high level in the infrasound range [below 20 hz] between the towers about 300 to 400mts from the turbines, this measurement has been done in RMS to convert to peak sound level needs to be multiplied by 1.414 which is 113db in peak for a 80 dB in RMS [root mean square] an increase in 10 dB equates to 10 times more force. So for instance a reading of 80db for 6.3 third octave at between the turbines has a force 1000 times greater than a force of up to 50 dB for 6.3 one third octave at the beach location .It must be noted that the beach locations identified in the Senate inquiry claiming infrasound at the beach was higher than at a wind farm in fact the two times I seen the beach talked about in the report were in fact about 1.5 kms from the wind farms and the information was plotted on a graph open to manipulation.
The wind Industry has no Integrity they will continue to do what they can get away with there has been no policing of what they do, the people working in and for the Wind Industry DO WHAT THE WIND FARM DEVELOPER PAYS THEM TO DO [this was the comment from Graeme White Garrad Hassan the designer of the Waubra Windfarm at the Stockyard hill Wind farm Hearing in 2010 at Ballarat] right wrong or otherwise does not matter who it is, they just act dumb do not ask questions in case they are made a fool of ,this goes for the local councillor up to the Prime Minister. [they trust the developer to tell the truth] Do they want to know the truth? Unless you have lived in close proximity to Wind Turbines and been forced to reside at another location because of the adverse health affects you are not qualified to comment on the affects that forced one to leave, this is a pulsating sound like no other

influenced by so many different things, affecting a large number of frequencies with different locations affected differently but one thing is for certain the sounds and the air quakes[vibrations in the air] we now experience when in the area affected by the wind farm was not experienced prior to the construction of the Wind farm, the first thing my neighbour said to me after the wind farm started was the wind is all choppy IT,S NO SMOOTH ANY MORE ,[stop chopping the air in which we live and breathe] The wind farm must be made a safe place to live and work turbines must now be removed to make this happen Why does persons employed by the wind farm operator and their immediate family included in the exemption if the predictions of sound were genuine [.proof attached.]
Acciona has built some 270 wind farms they would know what adjustment would be needed to make the predictions with a high degree of accuracy, as I stated early to put people through this harm and trauma using low frequency infrasound as a weapon is the work of a DICTATOR and a TYRANNICAL ACT and this matter must be treated as such and dealt with urgently.

Xxx xxx Refugee of the Waubra Wind Farm.

xxx& xxx xxx

The xxx-Story (abridged)

How a dream became a nightmare

A true story about the wind mania in northern Germany,
of two people who moved to the countryside in order to realize their dream of a peaceful life and work in the midst of nature and now, 17 years later, find themself in a permanent nightmare.

First, the quality of life dies

The nightmare startet and the consequences for us were the following:

Since 1995 we have to sleep with closed windows, because of the noise the wind turbines are producing - even when it is extremely hot. Relaxation und peace in our garden, on our land and with our animals is impossible when the wind blows - whether from south-east, east, northeast or northwest we can scarcely sleep even with closed windows. Conversation inside the house in certain rooms has been disturbed.

Shadowflicker, something very special we've never experienced before, came into our lives between November and February. The turbines throw a shadow in the mornings which gives us headaches, induces irritability and disturbs our concentration (we have our offices at home).

First symptoms of disease

Approximately 1996 we realized that we barely fall to sleep and weren't able to sleep through the night. We thought even to ask a dowser, to determine if our bed is standing above a water vein. We moved furniture between several rooms, but it was the same everywhere.
Symptoms such as ear pressure and noise in the ears were suddenly our companions. Visits to the doctor and medications became the rule for us. - I began to wonder why I felt better on my long and exhausting tours, than at home. During the work I recovered from my lack of sleep. Previously it was vice versa...

VAD and WTS - what healthy people makes ill beside wind turbines

Since 1997-8 we have registered the first symptoms of illness such as Tinnitus (deep vibrating and high piping tones), raised blood pressure, heavy ear pressure, a sensation of fullness in the ear and the sleep problems became more and more serious. This was getting worse all the time.

Xxx consulted four different doctors to find advice and support with his deep, sonorous drone in the ear. Many tests were made, but no one could explain this symptom, let alone help him. This drone is still to be unbearable companion.

Xxx heart-rhythm disturbances, accompanied by angina pectoris and occasional palpitations, increased extremely in 2004 so that in early 2005, a cardiac catheterization seemed necessary No organic results, but the symptoms are getting worse from year to year. We began to research, what may cause our illnesses.

In 2001, I (xxx) noticed for the first time several small reddish-white ulcers in the mouth and asked several doctors about the diagnosis and its cause. No one could explain these ulcers. In 2007, I saw photos of these ulcers in the mouth and in the bronchi of patients in Portugal who live close to wind power plants. In the investigations by Dres. Alves-Pereira and Castelo Branco one could read that these are typical symptoms of Vibro Acoustic Disease - VAD.

Years later, in December 2010 up to now my husband, xxx, from time to time noticed the same ulcers in his mouth!

Sharp tongues may say now, we were already sick when arrived in the countryside and lived extremely unhealthy. On the contrary. When we moved in 1994 to the Wilstermarsch, we were absolutely fit. As people who refuse drugs and alcohol, except wine on holidays, as Non-smokers and vegetarians who work a lot in fresh air, caring for the animals and cultivating the soil, to grow vegetables and fruits and do sports regularly, also without genetic predisposition, we are under normal circumstances not affected by the described diseases.

More and more wind turbines - increasing symptoms of WTS and VAD

Since 2001 the number of wind turbines in the neighbourhood has risen sharply. We can now see 121 turbines from our property at distances of between 320m and 15,5 km. The higher ones (up to 189m height) blink day and night. This is environmental plague during the day and we live in the middle of a blinking industry park in the night.

Parallel with the increase in the wind turbines and the level of exposure through low frequency noise, infrasonic, noise, shadow flicker and blinking, our medical symptoms have worsened.

We both suffer from noise, particularly from vibrations, which pass through our bodies day and night. For better understanding, imagine you would drive on a big ship (eg ferry between France and Corsica), or sitting in an airplane, where you can experience too these vibrations, which let vibrate the whole body. Marco knows them too from working with an orbital sander and I remember the vibrations in the Hamburg tram, on my way to school.

Long as one is in motion and changes the location from time to time, this vibration is sometimes more, sometimes less tolerable, depending on wind conditions. Immediately it is unbearable, if one comes to rest, especially in bed at night. In varying intensity, the body begins to vibrate; chest and abdomen are the most affected. The vibrations continue in the body in the form of a feeling of tiny pinpricks, and is always associated with chest tightness or chest pressure, breathlessness, and often with tachycardia.

There are also symptoms as sleep deprivation with frequent awakening and rising (normally we get 3-5 hours of disrupted sleep per night) to insomnia, concentration problems, Angina pectoris, rapid heartbeats and from tinnitus. Marco hears 4 different tones; the worst of all is a

deep and constant buzzing or droning. Until now none of the many consulted doctors have been able to cure this. xxx hears 3 sounds, the worst is an aggressive beating in her left ear, like the impulse when the wind turbine blades pass the mast. And we both suffer from raising blood pressure up to more than 160 (sys) and 100 (dia), especially at night, at medium wind speeds and wind from the southeast, east, northeast and northwest.

It is a scandal, the fact that in Germany health hazards caused by infrasound and low frequency sound are not discussed. The refusal of the German media to report that residents of wind turbines also are affected by noise, such as airport or highway neighbors, is intentional. No shadow should fall on the green and clean image of wind energy.

The fact that in Germany topics such as illness and death are taboo, and thus are not socially acceptable, prevents many people talking to their doctors, neighbors and even to friends when they realize the negative effects of neighboring wind turbines on their health. An unholy alliance which drives many people to despair.

Holiday and cure in wind-delusion areas?

VAD and WTS getting better in wind-power-free zones

For years we make the experience that our symptoms improve when we are on vacation. Even though our recovery needs more and more time from year to year. That's the reason, why we have made it a rule, always to ask when booking, whether wind turbines are around the hotel.

Last February we experienced the following: From home we had booked a hotel on the outskirts of Magdeburg in a large park near the river Elbe. On the usual question, one had assured us that the environment is free of wind turbines.

After several previous nights in Dresden in glorious peace and thus an improvement of our health status and finally undisturbed sleep, we noticed astonished, in the hotel in Magdeburg, that we could not fall asleep, we felt vibrations and our blood pressure measurement showed increased values.

The stroll the next morning solved the riddle: Approximately 2.5 km away we saw several Enercon turbines along the river Elbe which caused low-frequency sound. Now, as a precaution we Google the environment of the holiday place , even if the information of the hoteliers and landlords promises the absence of wind turbines.

Fortunately the question about wind turbines in the vicinity of the sanatorium at the Baltic Sea where I should go to recently, proudly was answered with YES. They held it for a terrific thing to have wind turbines next to the health clinic, because, cit. "this way no nuclear plant would be erected beside the clinic ..."
I let send back my documents and searched for myself an excellent wind turbines free clinic on the island of Fohr in the north sea.

The experiences that the symptoms of Wind Turbine Syndrome (WTS) are reduced after varying time, have all doctors been seen and confirmed in their studies. Just as we experience it on vacation, in hospital and sanatorium again. As proof, we collect our blood pressure measurements and perform harassment protocols.

People who leave their homes because they no longer bear the symptoms, can become healthy again. In countries with more flexible lifestyle, such as USA, Canada and Australia, people who suffer from wind turbine noise leave their homes more easy, than in Germany or other European countries. Even the complete economic loss of the property is accepted in many cases, to win back the health. However, with increasing age it is for most people a huge problem!

In Germany, victims of wind turbines seldom leave their homes, because here the people usually are connected with the residence, professionally and familiar.

This form of cold expropriation by the wind profiteers via expulsion of the residents living near wind turbines who do not accept the loss of their health and quality of life, is one of the great scandals of the wind madness!

(…)

Wind power plans in the rural communities destroy social structures

Many activists give up, because they are afraid of losing their social contacts in the communities. Those, who threaten the loudest, and instigate attacks at opponents of wind power, are usually also those, who possess most of the land and thus power, influence and money. Anyone who perseveres and keeps on fighting, has to accept disadvantages from exclusion of the village community, up to the loss of his job.

A crack is going through each community, where the citizens fight against wind power plans. Social structures such as neighborhood connections, friendship and family ties shatter by the greed of a few landowners, who want to enrich themselves at the expense of their fellow men and nature. We have seen how two old citizens, who once have been friends, pounce on each other at a council meeting. A sad picture. The peace in the village is strongly disturbed, often over generations. One experiences dramatically, how the greed for feed-in compensation and lease income change the people and how they stop at nothing. It is a disaster!

Become active in the community - solidarity is needed

The most secure way to keep the wind energy at bay is, to be active yourself and to ensure to change the majorities of the municipal council. This contributed, in addition to the contradictions to the landscape plan, essentially to the defense of Neuendorf-Sachsenbande from further wind energy plans. In 2008, at the last municipal election, the many “headwind voters” have changed the majority and the old mayor had to vacate his seat. With him there were further changes in the municipal council for the benefit of man and nature, against the wind energy. His deselection let the former mayor, and with him some of his closest

followers, foaming with rage against the new mayor, and of course against us as opponents of his plans.

Living near wind turbines - the lifelong threat

In the meantime, our health problems and complaints have steadily increased, so that today we cannot live without drugs. Blood pressure increases with each year beside wind power plants and led to kidney damage and more violent heart rhythm disturbances. In some nights, our sleep disorders are extended to sleep deprivation, because of the infra- and low-frequency noise emissions. Tinnitus, nausea and dizziness, and intermittent painful ulcers in the mouth, make our life a living hell.

Against infra-and low-frequency noise, we can all do nothing, for it can be stopped by anything, except a vacuum. It is this kind of noise, by which we get our terrible diseases. But at least we can push back the audible noise, by sound-proof windows with triple glazing. 14 new windows, which is very expensive, but the double-glazed windows are not sufficient for the noise, coming from nearby wind turbines. Can you imagine, that the wind power operators pay the new windows? Neither do we!

Unfortunately, these windows must remain always closed at night ...

The diagnosed Non-Hodgkin lymphoma, a lymphatic cancer in my mucous membranes, has encouraged the physicians, who research worldwide on the Wind Turbine Syndrome (WTS, Dr. Nina Pierpont, USA), the Vibro-Acoustic Disease (VAD, Professor Mariana Alves-Pereira, Portugal) and on high blood pressure near wind turbines (Dr. Sarah Laurie, AU), to discuss, if it could be a crossover of the diseases WTS and VAD, after 16 years of living next to wind turbines.

When we began researching, what could be the cause of our illness, I remembered my history lessons. There has already been thought, that the Nazis tortured their prisoners with infrasound. An insidious, undetectable torture technique. By the way: Recently, a German armory has applied two new infrasound weapons for a patent!

Our history of disease is very long, because we had a blessing in disguise. The wind turbines next to us are small, and in the early years of our country life we were not home regularly for professional reasons. Thus it had taken a long time, to solve the mystery of our health problems.

For several years, more and more citizens live in WKA height of 100-200 meters. They are getting the WTS-diseases much more rapid, the greater the nearby wind turbines are. That is getting worse with every year that WKA are built on all places.

Even if health problems by low frequency and infrasonic are still not discussed in Germany for ideological reasons, there are studies and field research worldwide by doctors, engineers and acousticians. Fortunately, there is the Internet and our global movement, to inform people

seeking help. Especially in Germany we are very grateful for it, because we are completely left alone by authorities, politicians and the media.

It seems to be easy to write about it, but living with all these symptoms after so many years of exposure, 320 meters away of wind turbines, to bear life-threatening diseases, is a torture and an imposition!

Long-term noise studies, which are in Germany of course not made at "good, clean" wind turbines, but at "evil" airports or busy roads, show, that the health effects are irreversible after 15 years of exposure nearby of noise sources.

We are in the 17 year!

Shadow flicker or cognitive disorder

In 2006, after we first informed us in the nationwide head wind movement and then have been integrated, we learned, that there are fixed time periods, for the duration of shadow impacts, to not exceedingly straining the residents with the fast light-dark flickering. Our complaint wasn't dealt for long time, and only on demand the responsible officer of the state environment authority told us, that we can't have shadow impact. Cognitive impairment?

During the next "shadow flicker season" from November to February we have produced a video as evidence for the gentleman in the authority, with the request to ensure that the wind turbines will be shut down during this time. But they took time again and again, to recalculate the coordinates of the wind turbine locations.

The message from the next higher authority: Only a short shadow impact possible in our house and that at times in which we not perceive it! So, in the next winter we made a second video for the officials, again with references to specific times, Info radio in the background, an actual newspaper with the date - as with a hijacking ... So the years go by...

Now we've got a suspicion: Could it be that the owners and operators of the wind turbines have built their industrial facilities without authorization in a different location ...? That would explain why the authorities weren't able to calculate the shadow-flicker at our home. Meanwhile we Goggled locations and distances of the turbines ...

(…)

Trickery - Camouflage – Cheating - - the methods of the wind-profiteers

Our attorney, a well-known lawyer for building law, wrote to the family, who, according to the sign at the so-called Wind Farm Neuendorf-Sachsenbande, is the designated operator, a warning to comply with the noise limits, before starting the action.

And lo and behold, it was said that none of the family is operator of these six turbines! And one does not know who operates the wind turbines...!

It should be noted: It is the family, who once received the building permit with obligations, they inaugurated the turbines in early 1995, since then they are marked as operator on the

sign, since 2006 they try, to enforce a repowering (replacing old small wind turbines by large new) with an approximately tenfold increase of the wind energy area in the municipality, this family collects the feed-in tariff for these wind turbines and has recently paid even a small sum of trade tax, together with a Mr. Wulf, who was once co-founder of Denker & Wulf PLC, this company, citation LLUR "... care procedurally and technically the turbines of Mrs. Huusmann."

The civil servant didn't pay attention, and may have unwittingly prescribed ...?

Till today none has announced himself as operator, admits everywhere a co-partner ship, and continues to try to trick with the help of all authorities.

The impudence of the wind power profiteers even goes as far, as to complain about alleged threats and accusations.

Loss of reality or "let's have a try"- mesh?

(…)

Windpower-Cynicism

Oh yes, we almost forgot to name the favorite question of all the cynics in the media, politics, wind lobby, government officials and environmental ideologues: "Why don't you leave the country, looking for another home?" Alternative: "Then go somewhere else, if they do not fit the wind turbines "! This reminds so fatal to the saying:" Then go to East Germany, when here it suits you not. "

Each of these cynics should personally experience the feeling of losing not only his self-generated values, excluding subsidies and government guarantees compensation paid by working citizens, and the safeguarding of age, but also his health!

That means the loss of social justice to us and all the other victims of wind energy worldwide. But can you imagine that in regions where politicians, decision makers, profiteers of all stripes live or have their holiday homes, wind power plants would be installed?

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But can you imagine that in regions where politicians, decision makers, profiteers of all stripes live or have their holiday homes, wind power plants would be installed?
Around the Starnberger lake, in the park of Baden-Baden, or near the Elbchaussee…?

Equally threatening is the loss of biodiversity through the massive development of wind turbines all over the earth, including the world's oceans, the expansion of monocultures and deforestation of rain forests. We are all witnesses, as the insatiable profiteers and their ideological and instrumentalized grass roots condone the extinction of species.

What we are witnessing since 1995 in our small rural community, has expanded in the last 10 years into a global threat for humans and nature, and destroyed all our livelihoods - for the infinite greed for money and power of a few energy-profiteers.

Unfortunately, our story and the wind power-cynicism goes on, but we organize ourselves better and more and more global.
We need every thinking and feeling human being on our side!

With greetings from the Windwahnmarsh

Schleswig-Holstein, Germany

xxx & xxx

For the past 35 years my wife and I have lived high up at the top end of remote Cwm Einion in Mid Wales. In September 2008 we had a wholly unexpected knock on our door. A wind farm consultant asked us, totally out of the blue, if we objected to having noise monitoring equipment placed in our garden to measure the sound of the babbling stream below our house against that of giant wind turbines. It was the first we heard of the project.
'How close are the turbines going to be?' we asked him.
'I should know, but I don't,' was his reply.
Not long afterwards it came to our notice that a complete plan had been drawn up by the same consultant and his colleagues some three months prior to his visit. He knew precisely where the turbines were planned!
Little did we know that this knock on our door spelled the end of our enjoyment for many years to come, perhaps for the rest of our lives? Government, planners and wind farm developers clearly have not an inkling of what it is like for the guileless resident to be confronted with such plans in close proximity to their homes; the disruption it causes even just to have to investigate what consequences such developments may have on their lives, and ultimately the realisation, as in our case, that you have no realistic choice other than to spend your retiring years fighting a battle which, it seems you cannot win, but which you cannot possibly afford to lose, for if you do there is just no way you can ever hope to get your life back on track again since the industry's assertion that you will not lose the value of your home is simply a gross distortion of the truth.

The first thing we found out was that an extensive survey of the area had been undertaken by Ove-Arup and Partners which excluded the nearest proposed turbine locations to our valley. These four turbines are inside an area considered to be so intrusive on the valley and the nearest residents and therefore so unsuitable for wind farm development that it did not even form part of the Ove-Arup search area, despite the fact that the assumed turbine height in the report is only 125 metres to blade tip while the turbines proposed by the wind developer, SSE renewables are 146.5 metres high. It was for this reason that my wife and I felt entitled to refuse noise monitoring from our garden, which was therefore carried out just outside our garden. The period chosen by the acoustic consultants was between 08-01-2009 and 09-01-2009.
Below our house runs a – sometimes fast-flowing – stream. After heavy rain it can rise and fall again in the space of 24 hours. During winter months, even when the flow is low, it can be heard quite prominently from our garden. But during spring, summer and autumn the sound is almost totally absorbed by vegetation – while the stream is also much lower most of the time, of course. There was heavy rain on 12th, 14th, 22nd, 23rd, 24th, 25th, 27th, 28th and 30th January. My wife and I therefore consider these tests completely flawed.
From the moment we were given the results of these tests we informed the developer and their consultants of our view that they should be declared invalid as they were clearly taken at the wrong time of the year. Three summers passed, during which there was ample opportunity to carry out subsequent monitoring to see if our objections made sense, but they declined to do so.

A few online searches brought us into contact with numerous residents who had been confronted with similar, though mostly smaller, developments in close proximity to their homes and felt this had wrecked their lives. Almost unanimously they implored us not to believe the assurances given by wind farm developers about no significant noise problems or not losing the value of one's home. Their biggest regret, we were told again and again, was that they had initially supported the developments near their homes, not realising the problems they were to encounter once the turbines were up and running. When I put this to

the then project manager – during a visit to our home – his answer was that a R.I.C.S. survey had concluded that house prices near turbines did not fall, but might actually rise. '*My wife xxxx and I are looking for just such a house as yours*,' he said encouragingly, but when I put it to him that he was welcome to make us a fair offer, he quickly backed off.
'*Because of the limited data available the findings require a degree of caution! This is only one study, and as more wind farms are built, more property will become proximate. Therefore, a cautious approach should be adopted until a larger and more in-depth study can be undertaken*,' so ends the 2007 R.I.C.S. report, based on just two rather ancient wind farms in North Cornwall: the 16 Bear's Down turbines are just 57 metres high, while the 11 St. Breock turbines are only 48 metres to the tip.
The report compares actual sale prices of properties '*in view of*' the wind farms, with similar properties '*not in view*' of a wind farm. So any property which failed to sell due to close proximity to turbines would not have formed part of this survey!
'*To some extent, wind farm developers are themselves avoiding the problem by locating their developments in places where the impact on prices is minimised, carefully choosing their sites to avoid any negative impact on the locality,'* conclude Mr Peter Dent and Dr Sally Sims, the authors of the report. So by selecting these two possibly untypical wind farms, Bear's Down and St. Breock, there is absolutely no reason to assume that this report gives an accurate picture. Yet this very report is referred to time and again by the DECC as well as by the industry as conclusive proof that property prices are not affected by close proximity to turbines, giving them a licence to dispense with any measures to '*avoid the problem by localising their developments in places where the impact on prices is minimised*'! Obviously the situation varies from case to case, but to pretend that no properties close to turbines lose any value or might actually be unsaleable is quite clearly a gross distortion of the truth.
I hasten to add that The Noise Abatement Society (NAS) reported serious problems at Bears Down Wind farm and issued a stark warning that public health could suffer from low frequency noise and a possible hum.
Here is a quote in the press from NAS' managing director Lisa Lavia on 17 January 2010:
'*Complaints about the health effects of onshore wind farms have seen a "significant" increase in recent years. Locals near the wind farm at Bears Down in Cornwall, for example, say they have experienced headaches, migraines, nausea, dizziness, palpitations, tinnitus, sleep disorders, stress anxiety and depression*.'
No one can tell me that this does not have a negative impact on the value and saleability of the homes of residents living in really close proximity to the Bears Down turbines and the problems date from long before the R.I.C.S. report: as far back as 16 October 2001, Patrick and Phoebe Lockett residents of Wadebridge wrote to the Western Morning News:
'*We live near the Bears Down wind farm in North Cornwall, where there are 16 turbines between 750 and 1400 metres from our home and we are subjected to intrusive noise. When the wind direction is south to south-westerly, there is a rhythmic thumping sound which disturbs us and our neighbours in our homes and gardens day and night.*'
As yet no '*larger and more in-depth study',* has been undertaken and Mr Peter Dent and Dr Sally Sims advice to adopt '*a cautious approach*,' is disgracefully ignored.

What is also ignored is RICS' paragraph on their very own website,
http://www.rics.org/site/scripts/faqs.aspx?categoryID=358&faqID=2819
which reads: '*a recent landmark case has shown evidence that house prices are affected by the close proximity of wind turbines. A council tax appeal ruled that Jane Davis will get a discount on her council tax because her home has lost value as a result of a turbine. This ruling could be regarded as an official admission that wind farms have a negative effect on prices.*'

In the spring of 2009 my wife and I decided that, rather than face years of fighting the Nanty moch wind farm proposal and having to put up with several years of construction noise and pollution to our water supply from one of the proposed access roads which would run in a half circle close around us, we'd put our house on the market.
We did not reveal the proposed project to the Estate Agent until he had informed us of the estimated value of the property, which he put at £ 300,000.–. When we informed him of the wind farm project, immediately after he mentioned this sum, he told us that his only experience of selling a property near a wind farm had been a house much further away from turbines which were far smaller than the ones proposed near us, but yet it had taken an excessively long time to conclude a sale. Though it was unlikely potential buyers actually heard any turbine noise at that distance they were not convinced it was not present. In our case: what made our house so utterly unique, in his opinion, was the total absence of any noise- or visual nuisance.
So despite his estimate, when it came to actually putting the property on the market the Estate Agent told us he could not agree to marketing it at its full estimated value as he felt that, under the circumstances, this would no longer be a realistic asking price.
There is absolutely no doubt whatsoever that we would have had no problem selling the property, even at a higher price than the Agents' estimate, except... viewers soon backed off the moment we informed them of the wind farm plans. In the first two months that we had the house on the market the Estate Agent did not reveal the wind farm proposal to potential buyers, so they knew nothing about it until we informed them, as is our legal duty, directly after they had viewed the property. From the moment, towards the end of May 2009, that the Estate Agent did start informing potential buyers, we had no more viewers.
Here is a letter from the very first potential buyer who came to see us, less than twenty-four hours after our house came on the market! We are still in contact with her. She has now bought a house in an almost identical location, though even more remote and within the Snowdonia National Park:

Dear xxx and xxx

Thank you for your hospitality. I'm so sorry I can't buy your house because of the proposed wind turbines and so disappointed because, at the moment, this is the loveliest and most peaceful place I have ever seen, a wonderful area for local people and those from away to enjoy and to recharge their batteries.

What the planners propose is absolutely abhorrent, it will devastate the land for all future generations, devalue property and I don't know how it can possibly have happened.

I'm so sorry also that after all your work you find it necessary to move from here.

Good luck and best wishes.

K. E.

It was our Estate Agent who, in the end, advised us to take the house off the market. As it was by now quite clear that there was absolutely no way we could hope to sell the house at a price anywhere near the sum we needed to find a property even remotely in the same category, we readily agreed. Having to show potential buyers around your house while fervently searching for a new home and at the same time desperately trying – in vain – to

make the wind farm developer and their consultants see sense about the closest turbines is an extremely distressing experience.
But when, two years on, we had still not been successful in persuading the wind farm developer and their consultants that erecting turbines close in front of us would be far too intrusive and likely to lead to serious sleep deprivation, we felt we had no choice but to put the house on the market again.
When we contacted the Estate this time it was explained to us that they were not keen to incur much further expense on a property that might prove very hard to sell. They sent us a list of previous viewings, which showed we had had 7 viewing in the first 7 weeks before the Estate Agent revealed the wind farm project to potential buyers. Four of these viewers had informed the Estate Agent that it was the proposed wind farm development that had put them off buying the property. The Estate Agent ends this viewing list with a note:

'*As this clearly shows, almost all of the viewers were deterred from making an offer on the property due to the wind farm development. Whilst we are more than happy to begin marketing the property for you again this year, we feel that we may be faced with the same issues*.'

On 24 September 2011 we discovered that our house was very high on Zoopla's '*most popular properties in Wales list*', most viewed online that is. Yet, despite the many enquiries at the Estate Agent, we only had two viewers in the three months it had been back on the market, one was extremely keen to buy, but declared it was the projected wind farm project that made him decide not to go ahead. The other viewer, the brother-in-law of a farmer who was to have 9 of the turbines on his land, claimed to have no problems with the projected turbines, but did not make an offer.

So we are stuck in a position where, if the project goes ahead, we are unable to move from here even if ill health or old age requires us to do so.
If given the go ahead the communities around the wind farm stand to gain some £7,500,000 in community obligations, whether they are negatively impacted by turbines or not!
Despite plenty of proof that properties in real close proximity to turbines are almost impossible to sell, DECC and industry doggedly continue to claim that properties 'in view of a wind farm' do not lose any of their value. No distinction is made between properties at, say, 5 miles from a wind farm or those in really close proximity.
Yet, as has already been established in Court: anyone who sells a property without informing the buyer of a proposed wind farm is liable to pay compensation for... loss of property value!!!

We are simple pensioners dependent on our state pension supplemented by a little interest from our life savings. A good part of our income has already been taken away from us as, for the past three years, we have not been able to invest our savings properly just in case we will somehow find a property to move to, but in the unlikely event that we really would find a property we could afford it would, without a doubt, deplete our savings, leaving us wholly dependent on our state pensions for the rest of our lives! What has been our dream home for 35 years – and our life annuity – has now turned into an absolute nightmare. Unless a proper solution is found for us, we are stuck here.
'If individuals feel that they have evidence to substantiate a claim of property blight they are of course at liberty to seek legal redress through the courts,' was former Welsh Assembly Government environment minister Jane Davidson's department's reply to my letter expressing our well-founded concern. So how, as an innocent individual of average means, is one

supposed to take on a huge wind farm multinational?

In his letter to me dated 24 August 2010, Mr Lawrence Avery, Wind Turbine Noise Policy Adviser at the Department of Energy and Climate Change put it like this:
'The *English* planning system is designed to protect amenity and environment in the public interest, balancing all relevant social, economic and environmental considerations. Of course, not all development will meet with the approval of those who live near it. However, the planning system does not exist to protect the private interests of one person against those of another, although the protection of individual interests is an important aspect of the public interest as a whole and private interests may coincide with public interests in some cases. *When a local planning authority considers an application for planning permission, the basic issue is not whether a particular development might cause financial or other loss to certain owners and occupiers in the locality*.
Mr Avery fails to say whether the situation in Wales is the same as in England, but we must presume it is. So according to DECC's Wind Turbine Noise Policy Advisor the planning system is thus designed that residents who lose the value of their homes due to close proximity to construction access roads or turbines can officially go to hell – with the blessing of the DECC.
Yet: on 20th December 2010, during a Commons Debate about the proposed High Speed Rail link, the Secretary of State, Mr Philip Hammond's reply to questions put by Maria Eagle (Garston and Halewood -Labour) about compensation for residents affected by the scheme was:

'*The hon. Lady asked about the compensation scheme. I have indicated that we will seek to go further than has happened with previous such infrastructure schemes in the UK, because it is right and proper that individuals who suffer serious financial loss in the national interest should be compensated. She also asked whether we will be setting a precedent in that regard. She should be aware that developing European jurisprudence in the area of property rights and the need for Governments to compensate is pointing towards more generous compensation becoming the norm, and I suspect that that will be the case for future projects.*'

Surely, should the IPC conclude that it is indeed in the National Interest for the proposed wind farm to go ahead, this would put residents like us in precisely the same category as the residents Mr xxxx refers to and we should be properly compensated. This is entirely supported by Case Law on the subject of nuisance suffered in the public interest:

'Acting in the public interest is no bar to action for nuisance. Though in the public interest someone committing a nuisance may still be subject to injunctive action or damages (Shelfer v City of London Electric Lighting Company [1894]). This principle was finessed in Dennis v Ministry of Defence [2003], which decided that any public benefit should not be taken into account when determining whether a nuisance extended in fact because, in certain situations, a claimant might be required to subjugate his rights for the greater good. If, however, the public interest was considered at a later remedy stage (once the fact of a nuisance had been positively established), the nuisance could continue but the public would be obliged to pay damages for the benefit received from it.'

<u>Our domestic water supply</u>:

The main access road for construction traffic to this proposed 64 turbine wind farm site runs close behind our house and crosses the stream which supplies us with our domestic water.

Run-off water from a long way up flows down a gully and into this stream. As very few vehicles use this road at present this has never presented a problem. But during the proposed three to four year construction period of the wind farm we can expect some 140,000 return journeys for all sizes and types of vehicles with a possible peak of some 200 per day. There can be no doubt whatsoever that our supply would be seriously contaminated if the project goes ahead and this road is used for access. The most obvious and very simple solution to this problem would be to install a new holding tank above the road and run a pipe through the culverts and down to our existing holding tank. I have suggested this measure a number of times, but until recently the developer and their consultants have point blank denied there is a problem. In her letter 20th December 2010 the present project manager finally admits there might indeed be a problem, yet she still refuses to implement our reasonable request saying in effect that she will not take proper action until pollution has been detected (and we are drinking from a polluted supply!).

SSE's Hydrology Assessment reads:
'*Door to door surveys of properties within the study area to identify the presence, use and nature of private water supplies, has also been carried out*,' and '*No effects on private water supplies are currently predicted.*
However, it will be important to ensure that water quality is monitored and this will include a number of water supplies close to the development during and after the construction phase.'

This is entirely incorrect. ***NO*** door to door survey has ever been carried out at our house and, at the time of publication of the Hydrology Assessment, ***NO*** door to door survey had been carried at any of our neighbours' properties either!!!

The project manager's letter reads: '*We have sought clarification from our hydrology consultants, SKM,'*,' *since your letter of 20th November. SKM are in agreement with your assessment that runoff currently runs down the road and enters the stream above Bronwion's PWS take and we have accepted mitigation measures recommended by them which will control any additional runoff generated during construction activity to upgrade the track (and the culvert crossing if this requires upgrade) and we anticipate no additional sediment entrainment within the stream. As part of the culvert crossing upgrade our mitigation measures include the directing of track runoff away from the watercourse to vegetated buffer strips which should improve on the current situation where track runoff flows direct to the stream. As mentioned in previous correspondence, during the detailed design phase for the Windfarm, which would be undertaken if we get planning permission for the project, we will undertake an assessment of the impacts that the construction may have on your water supply. If it is found that the construction will impact your water supply then we will provide a temporary supply for you. We will also monitor the quality of water in your supply and will install a temporary supply if the monitoring indicates any problems.*'

This is, of course, a complete nonsense as anyone would instantly acknowledge when shown the situation on the ground. A 'culvert upgrade' took place very recently, so there is a brand new culvert, but there is simply no way run-off water can be diverted in such a way that it would be '*directed away*' from the stream as is suggested in her letter. Water simply does not run uphill, not even in Wales! 'Monitoring' the quality of our supply gives us no guarantee whatsoever that we will not get to drink diesel polluted water from the run-off of the road. Such pollution can occur at any time after heavy rain. Tests carried out before the rain would be meaningless and there is every likelihood that our supply would be clear of pollution again if monitored a few days later. '*Monitoring the quality of our supply*' gives us absolutely no

guarantee that we will not be drinking heavily polluted water at least some of the time! What on earth is the point of installing a temporary supply if there is a perfectly simple and permanent solution which would do away with all need for monitoring, namely by abstracting the water from above the access road? Why are they so bent on creating a very serious problem while there is a perfectly simple solution to prevent all problems?

My utterly reasonable solution to prevent anyone falling victim to property blight:

In February of 2010, a few months before the General Election, the DECC put out a consultation document to enable interested parties to have their say regarding the then draft National Policy Statement for Energy Infrastructure.
In my response document I proposed for the first time my reasonable and very straightforward solution to the problem of possible property blight from close proximity to (giant) turbines. I believe that my proposition was utterly fair to wind farm developers and residents alike: '*obliging developers to buy the properties of any residents wishing to move away from a proposed development within two kilometres from their homes at a price somewhat above market value to compensate for loss of income, cost and inconvenience of moving, would offer the industry the one and only way to prove, once and for all, that their claim of house prices not suffering from close proximity to turbines is correct. However: should it turn out that such properties are not sold on quite as easily as the Industry makes out, it would be entirely fair for the Industry to bear the cost and not the innocent victim of such a development*.'
While totally fair to the developer its implementation would afford residents faced with wind farm proposals in close proximity to their homes the security and peace of mind they are entitled to in the knowledge that they won't be losing everything they have ever worked for should the plans go ahead.

The Department of Energy and Climate Change:

Between 1st February 2010 and 31st January 2011 I kept a daily record of the percentages contributed to the National Grid by wind turbines, on- and offshore, as shown on http://www.bmreports.com/bsp/bsp.php. According to this site the monthly averages in this period were 0.74% for February, 1.09% for March, 0.88% for April, 0.5% for May, 0.6% for June, 1.3% for July, 0.95% for August, 1.78% for September, 1.87% for October, 1.64% for November, 1.11% for December and 1.46% for January. There were 125 days when the site showed a contribution of 0.5% or less.
I sent an email to the Department of Energy and Climate Change to inquire why the figures which I had recorded did not tally with those given out by the DECC and the Industry. The reply I got was that wind turbines 'generate' around 70-80% of the time! As such a statement is totally meaningless if not accompanied with accurate information at what output turbines actually generated I sent another email to the DECC to point out this fact. The answer I received this time came from a Mr Matt Valentine of the DECC Correspondence Unit. Though Mr Valentine had never written to me before, his letter, attached to an email, read: '*I note what you say, however I do not feel that there is anything I can add to my earlier reply*.'
It was only recently that I took another look the attachment and noticed the title Mr Valentine had given to this document: '*08697* (my reference number) – *repeat offender on wind.doc'*.
Please find Mr Valentine's letter attached.

Xxx xxx xxx
Bronwion, Cwm Einion, Furnace, Machynlleth, Powys SY 20 8TD

2011-12-14

To Whom It May Concern,

The Talbot Wind project (100 MW in Chatham-Kent, Ontario, Canada) began functioning around our home last Christmas . There are 27 industrial wind turbines operating within 5 km of our home, and 41 turbines within 10 km. The nearest turbine is approximately 1.5 km from our home. The turbine model is Siemens 2.3 MW. The following points outline the effects the turbines are having on us:

- The turbine noise is very excessive and annoying, at times it can be heard inside our home with all the windows and doors shut. We have been forced to sleep in the basement and other unusual areas of our house to avoid the noise. We have been unable to enjoy summer nights of sleeping outside.
- My husband is experiencing sleep disturbance.
- My son has recently experienced a severe asthma episode (after many years of being asthma free) and has been prescribed adult dosages of corticosteroids -- he is only 10 years old. The World Health Organization recognizes that noise is a stressor contributing to asthma in children.
- Pre-turbine noise monitoring found that night time levels of noise were approximately 25 dBA, post-turbine noise levels around our home are now often above 40 dBA at night. We have been unable to enjoy our property like we used to due to the annoying turbine noise.
- I am experiencing ear and jaw joint pain, ear crackling and popping -- as would be experienced with altitude changes. I have also had a sensation of my ears "unplugging" shortly after the turbines in our neighbourhood are shut down. These symptoms are correlated to wind speed and direction.
- At every opportunity, prior to construction, the Ministry of the Environment (MOE) and the project proponents (Renewable Energy Systems) were made aware of the problems with the noise modelling used to determine turbine setbacks and the MOE's inability to monitor for compliance with noise guidelines.
- We have made over 70 calls to the MOE to report incidents of noise pollution (many of which went on all night long) and the local MOE officers have said that there is basically nothing they can do at the local level – they have no means to monitor compliance with noise guidelines.
- People have refused to visit or stay at my home because they experience negative health effects near wind turbines.
- Family pets display unusual and agitated behaviour depending on weed speed and direction.
- Our neighbourhood has experienced several large voltage surges since the wind turbines became operational – damages have been costly to repair and the incidents (flames shooting from receptacles etc) are frightening.
- Our quality of life has been very negatively affected by the wind turbines.
- Many of my neighbours are experiencing similar situations and some are more severely affected.

- Our home is no longer the quiet, healthy refuge that we have worked and sacrificed to build.
- I am very worried about the long term affects that the wind turbines will have on my family (especially my young son, whose school also has industrial wind turbines nearby).

Prior to the construction and commissioning of the Talbot Wind project, the MOE, all levels of government, and the wind proponent were told the noise models had severe shortcoming. They were also told that the MOE had no means or protocol to monitor for noise compliance. Yet still, the project went ahead.

Prior to the construction and commissioning of the Talbot Wind project, the MOE and all levels of government and the wind proponent were also told that adverse health effects and reduced quality of life were being experienced in the vicinity of existing wind turbines. Yet wind projects continue to be built.

The MOE, our government and the wind company has knowingly placed my family (and many others) in a harmful situation and knowingly left us with no means of resolving the problem.

All industrial wind turbines currently operating must be shut down and no more built in order to protect peoples' health. It is time for a full public enquiry into the industrial wind industry around the world.

Sincerely,

XXX XXX BSc (Agr) MSc
Ridgetown, ON
N0P 2C0
Canada

Impact of Talbot Wind Project (100MW in Chatham-Kent, Ontario, Canada)

Please note that only impacts that have been personally communicated to XXXXand xxxx XXXX are presented.

Numbers correspond to circled numbers written on the RES Figure 7.6

1: disturbed sleep
2: disturbed sleep, nausea, headaches
3: this was supposed to be a lot for a retirement home... but not now
4: resident wears earplugs to bed and can still hear turbines
5: can hear turbines inside home
6: can hear turbines inside business
7: wind company has hired acoustics firm to monitor noise here
8: wind company has hired acoustics firm to monitor noise here. Residents feel they have been deceived regarding the noise impacts of the project.
9: sleep disturbance, excessive noise, night time noise has gone from 25 dbA to often over 40 dBA, new jaw joint and ear pain and popping, sudden severe asthma episode
10: TV, phone interference, disturbing noise, swirling winds
11: hear turbines all the time, increased headaches (these people sold the home and moved recently)
12: "like living in an airport" now
13: headaches and nausea depending on wind direction
14: hear turbines in home, installed blinds, built a waterfall to drown out the noise
15: disturbed sleep, excessive noise